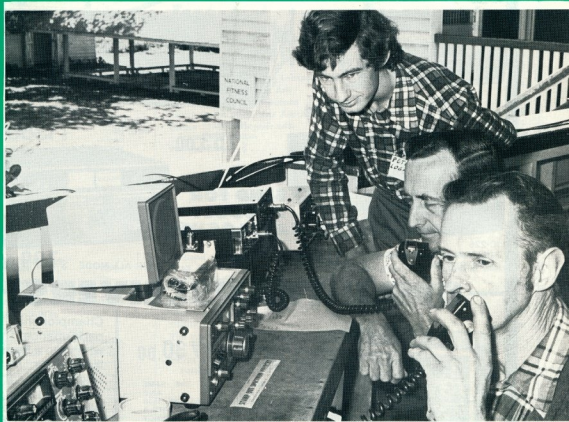


# amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA



VOL. 47, No. 5

MAY 1979

## *FEATURED IN THIS ISSUE:*

- ★ VOX ADVANCE
- ★ SIMPLE 10 GHz RECEIVER WITH TRANSMITTER OPTION
- ★ RETURNING THE 50-52 MHz ALLOCATION
- ★ EARLY DAYS IN RADIO
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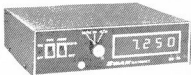
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# amateur radio

## CONTENTS

### Technical

AOCP Exam — February 1979	29
Little Boxes	16
NOVICE NOTES:	
Testing Capacitors for Leakage	24
One Flash and You're Ash	24
AC Mains Plug Connections	24
Returning the 50-52 MHz Allocation	11
Simple 10 GHz Receiver with Transmitter Option	20
VOX Advance	8

### Departments

Amateur Satellites	46
Around the Trade	33
Awards Column	47
Book Review	24
Contests	46
Divisional Notes	49
Editor's Desk	7
Hamads	49
International News	48
Ionospheric Predictions	48
Letters to the Editor	30
Magazine Index	32
Obituary	51
QSP	4, 10, 28, 50
Silent Keys	50
Technical Correspondence	31
VHF/UHF — an expanding world	40
WIA Education	32
WIANEWS	5
WICEN	46
You and Dx	42

### General

All-Band Scramble: Country Style	22
Early Days in Radio	23
Geelong Radio and Electronics Society	28
Isle of Man	23
Meet the "Thugs"	29
SMIRK	39
The Intruder Watch in Region 2	28
The 1979 FACT Symposium	22
VK/ZL/Oceania Dx Contest 1978 — Foreign Results	38

ADVERTISERS' INDEX 50

## Cover Photo

Manning the portable amateur radio station (VK4WIR) to cover the WIA Capricornia Amateur Radio Festival in September '78 are, from left, Novice operator Peter Logan who is waiting to be allocated his call sign, Doug Kraatz VK4ZDK, and Gordon Adams VK4GM. (See the report in November AR.)

Photo courtesy of the Morning Bulletin, Rockhampton.

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Secretary — Mr. F. Robertson-Mudie VK1NAV

Broadcasts — 3570 kHz and 2m Ch. 6 (or 7): 10.02Z.

## NSW:

President —

Secretary — Mr. T. I. Mills VK2ZTM

Broadcasts — 1825, 3995, 7146 kHz, 28.32, 52.1, 52.525, 144.1, Ch. 8 and other relay stations: 01.00Z. (Also Sunday evenings 09.30Z and Hunter Branch, Mondays 09.30Z on 3570 kHz and ch. 3 and 6).

## VIC:

President — Mr. E. J. Bugbee VK3ZTN

Secretary — Mr. J. A. Adcock VK3AGA

Broadcasts — 1825, 3500, 7135 kHz — 53.03Z AM, 144.2 USB and 2m Ch. 2 (5) repeater: 10.30 local time.

## QLD:

President — Mr. A. J. Aarsse VK4QA

Secretary — Mr. W. L. Gellis VK4ABG

Broadcasts — 1825, 3580, 7148, 14342, 21175, 28400, kHz; 2m (Ch. 42, 48): 09.00 EST.

## SA:

President — Mr. C. J. Hurst VK5HI

Secretary — Mr. C. M. Pearson VK5PE

Broadcasts — 1820, 3550, 7095, 14175 kHz; 28.5 and 53.1 MHz, 2m (Ch. 8): 09.00 S.A.T.

## WA:

President — Mr. L. A. Ball VK6AN

Secretary — Mr. P. Savage VK6NCP

Broadcasts — 3600, 7080, 14100, 14175 kHz, 28.53 and 52.19 MHz and 2m (Ch. 2): 01.30Z.

## TAS:

President — Mr. I. Nicholls VK7ZZ

Secretary — Mr. P. T. Blake, VK7ZPB

Broadcasts — 3570, 7130 (AM) kHz with relays on 2m Ch. 2 (8), Ch. 8 (H), Ch. 3 (NW), 28.56 (AM), 52.525 (FM), 144.1 (AM) and 435 (FM) MHz 09.30 EST.

## NT:

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Vice-Pres. — Barry Burns VK8DI

Secretary — Graeme Challinor VK8GG

Broadcasts — Relay of VK5WJ on 3.55 MHz and on 145.5 MHz at 2330Z. Slow morse transmission by VK8HA on 3.555 MHz at 1000Z almost every day.

## Postal Information:

VK1 — P.O. Box 46, Canberra, 2600.

VK2 — 14 Atchison St., Crown Nest, 2065 (Ph. (02) 43 5795 Tues & Thurs (10.00-14.00)). P.O. Box 123, St. Leonards, NSW 2055.

VK3 — 412 Brunswick St., Fitzroy, 3065 (Ph. (03) 41 3535 Weekdays 10.00-15.20H).

VK4 — G.P.O. Box 638, Brisbane, 4001.

VK5 — G.P.O. Box 1234, Adelaide, 5001 — HQ at West Thebarton Rd., Thebarton (Ph. (08) 254 7442).

VK6 — G.P.O. Box N1002, Perth, 6001.

VK7 — P.O. Box 1510, Launceston, 7250.

VK8 — (Incl. with VK5), Darwin AR Club, P.O. Box 37317, Winnellie, N.T., 5789.

**Slow morse transmissions** — most week-day evenings about 09.30Z onwards around 3550 kHz.

## VK QSL BUREAUX

The following is the official list of VK QSL Bureaux, all are Inwards and outwards unless otherwise stated.

VK1 — QSL Officer, G.P.O. Box 46, Canberra, A.C.T. 2600.

VK2 — QSL Bureau, C/- Hunter Branch, P.O. Tenby, N.S.W. 2284.

VK3 — Inwards QSL Bureau, Mr. E. Trebilcock, 340 Gillies Street, Thornbury, Vic. 3071.

VK3 — Outwards QSL Bureau, Mr. R. R. Prowse, 83 Brewer Road, Benlough, Vic. 3204.

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VK6 — QSL Bureau, Mr. J. Rumble VK6RU, G.P.O. Box 5318, Perth, W.A. 5001.

VK7 — QSL Bureau, G.P.O. Box 3710, Hobart, Tas. 7001.

VK8 — QSL Bureau, C/- VK8HA, P.O. Box 1418, Darwin, N.T. 5794.

VK9, 9 — Federal QSL Bureau, 23 Landale Street, Box Hill, Vic. 3128.

Listening to some QSOs, one is often astonished at the lack of knowledge about the WIA, exhibited, not only by members and non-members, but also by those who should know better.

The problem then, appears to be a communication stumbling block somewhere in the system, working, so it seems, both ways, executive — councils — members and vice versa.

After some six years on the council of the Queensland Division, I have come to the conclusion that the main stumbling block is usually the council-member-council network.

VK4 recognised the problem some four years ago and took steps to rectify part of the problem with the Institution of the Radio Club Workshop, which has just finished its fourth annual meeting. Its success may be measured by the fact that over forty constructive motions were presented and discussed by the affiliated radio clubs in Queensland.

Besides the direct communication link between council and club delegates, who, incidentally, represent some sixty per cent of the total WIA members in VK4, the federal councillor for Queensland is now able to state that his views at the federal convention represent the views of the majority of WIA members in Queensland.

Another direct communication link between council and radio clubs was established last year, the weekly radio club net whereby club representatives are able to have direct access to council and discuss problems, solutions and suggestions, without fear of misunderstanding or lengthy delays. We are happy to announce that this system works very well, something we, unfortunately, cannot as yet say about the council-member link, the Queensland net. But given time, it will work to the benefit of both the member and council.

These then, are but a few solutions Queensland is trying out to overcome one of the major communication stumbling blocks in a communication oriented hobby.

The necessary positive feedback is starting to come in from members, albeit very slowly, but it is nevertheless a hopeful sign that we are on the right track.

Next step is an effective inter-communication system between councils — we don't need one with the Executive, that is already satisfactory — and eventually we somehow could achieve Bob Arnold's idea, without losing our precious State identity.

Communications in times of stress (VICEN, channel 5A, channel D) is near total, why not under "normal" conditions?

JOHN AARSSE, VK4QA  
President, VK4 Division.

**QSP —**

**Communication**

(ACT OF IMPARTING [ESP. NEWS];

INFORMATION GIVEN; SHARING.) . . .

. . . The Concise Oxford Dictionary.



# WIANEWS

This is the text of a letter sent to the Minister for Post and Telecommunications on 14th March, 1979 —

"Recent newspaper reports (Reference 1) compel the Wireless Institute of Australia, on behalf of the Amateur Service, to raise once again the whole issue of piece-meal approach to spectrum management in Australia and, in particular, the continued and planned use of TV Channel 5A.

Only in Australia, and nowhere else in the world, does a broadcasting allocation exist adjacent to the Amateur two metre band. The Institute seriously questions the wisdom of continuing to make use of incompatible frequencies for television broadcasting contrary to recognised international practice when compatible international spectrum is available but unused (UHF) (Reference 2).

From the information available, and in the light of recent investigations by amateurs and others in this country, it is obvious that the co-existence of amateurs and television broadcast stations on adjacent channels is a volatile combination (Reference 3).

The closure of amateur stations which may be alleged to cause interference to Channel 5A reception, as has been suggested (Reference 4), is considered by this Institute to be a dictatorial stand and unacceptable to the thousands of radio amateurs wishing to make use of their two metre spectrum allocation. This would be unnecessary if the broadcast spectrum were to be properly planned.

The Amateur Service has contributed, and is still contributing, to advances in technological and scientific areas and, on this basis alone, vigorously defends the tenancy of the two metre band — the only internationally exclusive allocation in the VHF and higher frequencies to 24 GHz, available to the Amateur Service and in particular the limited licensees.

Australia's contribution to the Amateur satellite programme is well known. It is iniquitous that Australia's amateurs should be denied access to an international resource merely because of a television station allocation unique to Australia.

The WIA therefore believes that, for the above reasons and for other sociological and technical reasons, the Channel 5A allocation should be withdrawn with the utmost speed and that all existing and proposed 5A services be transferred forthwith to UHF.

Reference 1: Hamilton Spectator 19/12/78 and 4/1/79.

Reference 2: ITU Radio Regulation 3580 (Footnote 279A) and Huxley.

Reference 3: Material supplied by Victorian Channel 5A Committee.

Reference 4: Letter from PM to VK3OT."

In a note circulated to Divisions on 7th with regard to WARC 79, the Federal President announced that in the Australian proposals for the work of the conference, it was proposed that footnote 3580/279A be modified to read —

"In Australia the band 137-144 MHz is also allocated to the broadcasting service for television until that service can be accommodated within the Regional Broadcasting allocation."

This footnote presently reads —

"In Australia the band 137-144 MHz is also allocated to the broadcasting service for television."

## 6m BAND

In his note the Federal President also advised that it is proposed to maintain the Region 3 allocation of 50-54 MHz with a modification of Footnote 3544/246 for Australia that the band 50-54 MHz is also allocated to the broadcasting service. At present, this footnote states that in Australia the band 50-54 MHz is allocated to the fixed, mobile and broadcasting services.

He also advised that Australia proposes the introduction of new world-wide exclusive amateur bands 10.1-10.2 MHz, 18.058-18.168 MHz and 24.15-24.35 MHz.

Australia, he wrote, proposes for 40m, an exclusive amateur band extending from 6.95-7.1 MHz and various additional allocations for amateur satellites in the existing SHF amateur bands between 2 and 11 GHz. No Regional or Australian change to existing amateur allocations were proposed.

The Federal President, it will be remembered, is Chairman of Committee 2 of the Australian Preparatory Group (APG) for WARC 79.

## 1979 FEDERAL CONVENTION

Mr. Ron Henderson VK1RH will be attending the 1979 Federal Convention in his own right as Federal Councillor of the ACT Division.

Additional Agenda Items for the Convention includes three from the SA Division relating to WIGEN and one from the NSW Division on the same subject. VK2 also included an Agenda Item supporting the circulation of Convention Minutes to Clubs.

Since this newsletter is being written before the closing date for Agenda Items additional Items are expected to be submitted from both VK2 and VK4.

## 1979 CALL BOOK

Considerable discussion at Executive level, as well as in the Publications Committee, has been conducted in relation to the 1979 Call Book.

The unhappy situation reported in March WIANEWS has been resolved with most welcome co-operation from the P. & T. Department. Almost complete listings have been received for all months from May 1978 to January 1979. Details for later months are also promised.

So many complaints were received about the use of the computer prints used for the 1977 Call Book that typesetting for the 1979 Call Book will be used. Ways and means to keep the price of the Call Book below \$3 are being closely examined.

For many years a demand has been observed for the publication of monthly updates or possibly the production of a mid-term supplement (i.e. 1980, etc.). Monthly updates in AR occupy space to the exclusion of other material unless the magazine's size is increased by additional pages at extra cost probably unsupported by additional advertising according to enquiries made. There are problems involved with producing a mid-term supplement, but these now appear capable of being resolved, at little extra cost, by the use of a word processor either commercial or in-house.

## EXAMINATIONS

A meeting on 17th March chaired by Mr. G. F. Scott, the Federal Education Co-ordinator, and attended by experts from VK2, 3, 4, 5 and the P. and T. Department, produced an AOCOP syllabus jointly agreeable to all parties. A small amount of residual work is required which should be finalised quite quickly. As a result, it now seems almost certain that the August AOCOP theory exam will be multi-choice thanks to good co-operation shown by the Department. If this is achieved the marking of answer papers, even by computer possibly, will significantly reduce the delay of the past in announcing results.

The opportunity was also taken to discuss the Novice Morse examination.

## MEETINGS

Executive Meeting on 15th March also discussed the certificate sketches for the Ron Wilkinson Achievement Award, 1979 RD Contest opening address, Federal Treasurer, responses to WARC 79 appeals, workload of the Executive office arising from the greatly increased membership, the future production of AR and inter-related subjects, CCIR Seminar in Sydney, medallions for the 1979 VK/ZL/O Contest.

It was regretted that an NZART invitation to send WIA representatives to their annual Convention in June could not be accepted because of heavy involvement with preparations for WARC 79.

At the meeting of the Publications Committee on 6th March the 1979 Call Book production occupied much time to enable distribution to be made no later than about July or August, continued quality production of AR and the continuing need for photographs and technical articles.

Meetings of the VHF/UHF Advisory Committee on 27th February and 22nd March were occupied almost wholly in discussions on the Channel 5A situation and WARC 79 matters.

A routine meeting of the Federal Repeater Sub-Committee was held on 11th March.

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Bruce Bathols VK3UV

## YOUR MAGAZINE— AMATEUR RADIO

### LETTERS TO THE EDITOR

Sometimes the cat gets amongst the chickens—going on some of the letters we receive on varying subjects. Space for letters must be restricted to approximately one page, however, we endeavour to publish most of the letters received. The probability of early publication of your letters is inversely proportional to its length—i.e. the longer the letter, the longer it may take to appear. Please try to keep your letters to less than 250 words. If you want to criticise AR or the WIA, do it by all means—but in a constructive way. No "Waffle"—please! We can only judge our performance by your remarks.

### ARTICLES

We are always looking for original material, however, we are not averse to publishing an item which has appeared in other magazines/journals, should the need arise, or if we consider it to be of importance and interest to our readers.

Space preference naturally will be given to our contributors' items. To keep printing deadlines and to allow for forward planning, it is necessary to keep a ready supply of completed articles three months in advance. This leads us to several problems which have been experienced by some authors in delayed publication.

In attempting to cater for nearly everybody, we strive for a balance between technical and non-technical material. Our readership is over 15,000 (proven by various surveys) and with almost as many different views.

We have been criticised for not publishing material especially for novices. To the "knockers", we suggest you have a look at the "Novice Notes" column from time to time.

Remember also our policy is to publish "original" material where possible—if you want more in Novice items, put pen to paper and let us have your ideas and submissions.

With nearly 2,000 Novices in our ranks, the column should be self-generating—but why isn't it?

Only you have the answer.

### PREPARATION OF MATERIAL

As mentioned previously in AR, articles do take several months before publication is effected.

On receipt of your article, the details are recorded and an acknowledgement sent to the author—usually within 10 days.

All technical articles are perused by our technical editors (in their spare time), and it is then returned to the editor for gram-

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Drafting of diagrams is carried out by our draftsman (in his spare time). Some drawings, particularly logic and PCB layouts, take many hours of work.

The average time taken to prepare an article to the typesetting stage is three months from date of receipt.

Unless you are able to provide material and drawings to the standard AR readers demand, we ask you to bear with us a little

while we do the preparatory work.

After typesetting, we must then arrange to "slot" the item in with previously prepared material, and to strive for our balance of material.

Please keep the articles coming in; don't forget Novice items and photographs.

The editor's lot is not a picnic, but it can be very satisfying.

73s until the next time I can spare a few moments to write a column.

B. BATHOLS VK3UV.

## DONATIONS FOR WARC 1979

### LIST No. 2

The Executive wishes to acknowledge with grateful thanks the receipt of the following donations from WIA members for WARC 79 (further lists will follow):—

EM & DRC (Sept. 1978)	.....	\$100.00
Anon. (at EM & DRC Sept. 1978)	.....	10.00
VK8ZSB	.....	7.00
VK3ATC	.....	11.00
VK6MH	.....	3.75
VK6AH	.....	3.75
VK8CA	.....	4.50
VK3NAJ	.....	5.00
VK3NAJ	.....	5.00
VK3ZUJ	.....	7.00
VK5JF	.....	5.00
VK3AJH	.....	7.00
VK4CU	.....	20.00
VK3BFJ	.....	12.00
VK3YPX	.....	2.00
VK2QC	.....	10.00

VK6FA	.....	5.00
VK7RY	.....	10.00
VK3AOX	.....	10.00
VK3CX	.....	7.00
VK3SM	.....	5.00
VK3YAY	.....	21.20
VK3BMC	.....	2.00
VK3MD	.....	10.00

*Are you checking  
our bands for*

**INTRUDERS**

**AND REPORTING SAME TO  
THE INTRUDER WATCH  
CO-ORDINATOR?**

**VOX ADVANCE**

One of the problems of VOX systems is the time lapse between the presence of audio and the completion of the receive to transmit switching. While this delay is minimal with the solid state switching in later equipment, many rigs still depend on a relay which only extends the delay.

One of the effects of this delay is the clipping of the leading syllable of each over. Operating procedures have evolved to disguise this problem. These include extension of the leading syllable and saying "Ah" until the relay has pulled in. While these methods are considered as "trade marks" to some, they don't blend with articulate speech.

An alternative, which is developed here, is to delay the audio until the VOX circuit has completed switching.

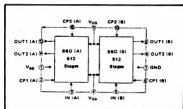
Delay concepts have been used in other facets of audio electronics such as voice scrambling, reverburation and telephone time compression. Methods of delay have ranged through tape loops, long echo tubes and springs, but they have always been mechanical. Because of their complexity or unwieldiness, little use was made outside of musical effects techniques. With the advent of audio delay integrated circuits these mechanical methods became obsolete. Now some of these delay lines, integrated circuits, called bucket brigade devices, are generally available.

The basis of operation of a bucket brigade device (BBD) is to sample the signal at finite intervals and pass these samples along a chain of capacitor FET stages. The sampled signal then appears at the end of the chain with a time delay set by the number of links and that finite interval (determined by a clock frequency).

Without delving too deeply into theory, any recurring wave such as audio, no matter how complex, can be resolved into a set of sine waves of varying frequency, phase and amplitude. This is the basis of Fourier analysis, after the French physicist Joseph Fourier (1768-1830). Also, any sine wave can be regenerated from a series of fixed values providing there are at least three values per cycle to work with. This means that the audio signal can be regenerated from the BBD output providing it yields at least three values, per cycle, of the highest frequency Fourier component. Of course, this is a theoretical limit for in practice about fifteen values, per cycle, are required for complete regeneration. This sampling, passing and regeneration is the basis of the BBD delay system.

The chip used is the MN3001, dual 512 link BBD in a 14 pin DIL package. It is made by Matsushita of Japan and distributed in Australia by the Elcoma division

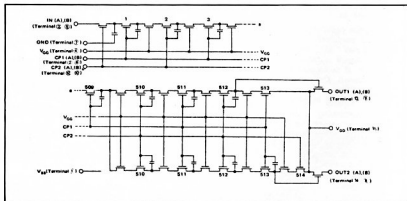
Evan Jarman VK3ANJ



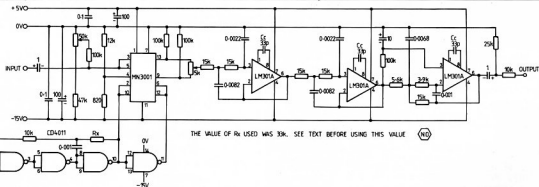
**FIG. 2A: Block Diagram**

of Philips. One off lots can be purchased at Dick Smith's.

Each link in the chain uses two FETs and a capacitor. It is wired so that in the presence of a clock pulse the capacitor's charge is revised to a value synonymous with the input. The tailing FET is a buffer allowing perception of the capacitor's charge with minimal interaction. Two clocking inputs are required (connected to



**FIGURE 2B: Circuit Diagram**



**FIGURE 2: Schematic Diagram of VOX Advance Circuit**

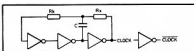


FIGURE 3

alternate links) to overcome the problem of revising capacitor charge while being read by the next link.

The chains operate in a master-slave form. While the clock is on, the first link (master) is set, and when the clock is off the second link (slave) follows the master. A separate not-clock, or anticlock, pulse is required to drive the slaves. Unfortunately as the master-slave requires two links, the number of effective links is half the actual number in the chain.

In the VOX advance the two chains are operated in a staggered parallel formation.

The parallel operation allows for higher bandwidth by passing a higher frequency Fourier component. This may seem a waste, but remember that relay type VOX systems have a greater delay than that which these chains normally cater to. Longer delays mean lower sampling rates and so imply reduced bandwidth.

Operation in a staggered system means that the chains are alternately sampling audio. This is achieved by reversing clock lines to the second chain: clock becomes anticlock and vice versa.

The BBD does require a source of both clock and anticlock pulses; provided here by a CMOS logic oscillator. (Fig. 3).

The oscillator can use any inverting gate, or inverting combination of gates, however, due to pin configurations on the printed circuit board, only '4001 and '4011 chips can be used. As the inputs are tied together the difference in logic type is immaterial. The frequency of oscillation is

$$f_{\text{clock}} \sim \frac{1}{2RxC} \left( \frac{0.405Rk}{Rk + Rx} + 0.693 \right)$$

Further details can be found in National Semiconductor's AN118 (ref. 1). The complementary anticlock pulse is derived by passing the clock through the remaining gate.

The delay is indirectly proportional to the clock frequency; it equals the number of effective links multiplied by the clock period. So by using the frequency equation the delay can be expressed as:—

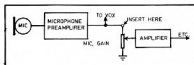


FIGURE 5

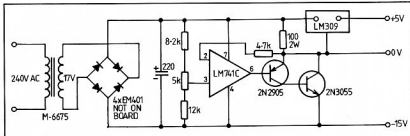


FIG. 4: Aux. Power Supply — Neutralisation Capacitors for LM309 not showing.

$$\Delta t = 512RxC \left( \frac{0.405Rk}{Rk + Rx} + 0.693 \right)$$

The manufacturers specify a maximum delay of 25.6 msec.; probably due to capacitor leakage. On the circuit diagram I chose Rx as the frequency determining component. A plot of delay vs. Rx is included (Fig. 4) to assist choice of an appropriate resistor. Just remember that the actuation time of relays is 6 to 10 msec.

Although the staggered system eliminates the clock component from the BBD output, switching transients will still be present. These transients must be suppressed or they can lead to spurious emissions. The first two operational amplifiers, operating as low pass filters with a Q of 1 and a cut off of 2.5 kHz, achieve the suppression. If you wish to run an alternate pass characteristic, then I refer you to the good pragmatic discussion in the book by Hayward and DeMaw (ref. 2), page 80.

Suitable operational amplifiers are the LM307, uA741 and MC1439, all of which don't require the compensation capacitor (between pins 1 and 8), while the LM301 and uA748 can be used directly.

The last stage is an audio amplifier, with a gain of 8.5 dB, to compensate for the losses of the BBD. It, too, has a cut off frequency, but it is about the 6 kHz mark.

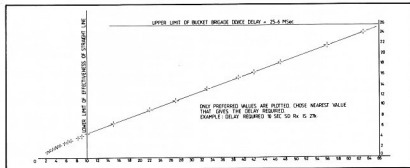
The MN3001 is a p-channel silicon gate device requiring a negative voltage; —15

volts. If you are unable to tap a source of negative voltage in the transceiver then an auxiliary supply will be required. In my example the voltage is split using an error amplifier referenced to a voltage divider. Although I used a 2N3055 due to a need for extra power for something else, a 2N3053 should be a satisfactory substitution. The 24 volts DC used to drive the system is arbitrary, although the LM309 will require at least 7 volts for good regulation. Drain on each supply is approximately 10 mA. The trimpot is adjusted to give —15 volts, the 5 volts being independent. See Fig. 4.

Of the transceivers I know, the audio input scheme seems to be as shown in Fig. 5.

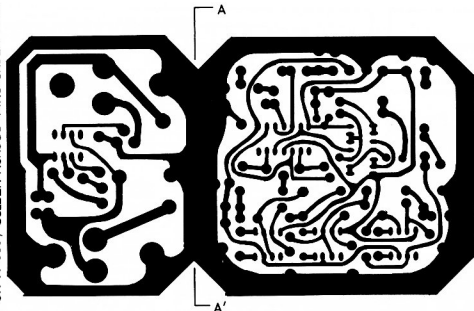
The mic. gain, being a front panel control, is usually fed by wire from the audio board. The delay system is placed in this wire; I unsoldered the wire at the potentiometer. An extra point has been provided on the printed circuit board, in case the VOX line is soldered to the mic. gain potentiometer. Systems do vary so individual appraisal is necessary.

By the use of reverse logic the unit has been called a VOX advance. The advance can cope with most relay VOX systems for the average relay takes 6-10 msec. to actuate; maximum advance is 25 msec. The delay equation was quoted to allow tailoring to major variations. The VOX "delay" control will need trimming to accommodate the leading pause. Once the system is operational, please try to drop the opening flourish, or "Ah". Make clean articulate speech your "trade mark".



GRAPH: Plot of Delay (m/sec) Vs Rx (kilo-ohms)

IF USING THE NEUTRALIZATION CAPACITOR  
ON A 309, SOLDER ACROSS PINS UNDER PCB.



LEFT:

Printed  
Circuit Board —  
Artwork —  
Full Size.

BELOW:

Component  
Layout for  
PCB.

#### REFERENCES:

1. National Semiconductors Application Note 118. Published in the CMOS Data Book, March 1975.
2. Wes Hayward and Doug DeMaw, Semiconductor Design for the Radio Amateur. ARRL 1977. (Available through Magpubs, see Book Review, AR 11/77.)

#### CALCULATED VALUES USED IN PLOT

$$\text{Delay} = 512 \text{ RxC} \left( \frac{0.405 \text{ Rk}}{\text{Rx} + \text{Rk}} + 0.693 \right)$$

$$C = 1.0 \text{ nanofarads } (1.0 \times 10^{-9} \text{ F})$$

$$\text{Rk} = 10 \text{ k ohm } (10000 \text{ ohm})$$

Rx(k ohm)	1/2f clock(usec)	Delay(msec)
	10 <sup>-3</sup> sec	10 <sup>-3</sup> sec
2.2	2.25	1.15
2.7	2.73	1.40
3.3	3.29	1.69
3.9	3.84	1.97
4.2	4.11	2.10
4.7	4.55	2.33
5.6	5.33	2.73
6.3	5.93	3.037
6.8	6.35	3.35
8.2	7.51	3.84
9.0	8.16	4.18
10.0	8.96	4.59
15.0	12.83	6.57
18.0	16.52	8.46
22.0	18.03	9.21
27.0	21.66	11.09
33.0	25.98	13.30
39.0	30.25	15.50
42.0	32.38	16.50
47.0	35.91	18.39
56.0	42.24	21.63
63.0	47.15	24.14
68.0	50.65	25.95

A technical problem has arisen and to enable normal publication of this issue, the component layout for this item, will be published at a later date. Apologies to all concerned — Editor.

## QSP

### BLITZ ON CB RADIO IS PLANNED

The Federal Government is planning a blitz on CB radio users whose equipment interferes with television, radio and hi-fi reception.

They will face stiff fines and run the risk of having their equipment confiscated.

The tough regulations are part of a code the Government has drawn up to deal with CB trouble-makers.

More than 23,000 complaints of CB users interfering with television and radio reception were investigated in 1977-78.

CB enthusiasts who use obscenities in their transmissions, broadcast false or misleading messages, or play music or advertisements will face prosecution.

The regulations were announced this week by

the Post and Telecommunications Minister, Mr. Staley.

They follow a top-level review of CB radio operations and put new teeth into the Wireless Telegraphy Act.

From "Sunday Telegraph" 25-2-79.

### ARRL EME COMPETITION

QST for September 1978 includes details of the first ARRL EME competition won by YV5ZZ. The only VK entrants was VK5MC operating on 2m. One entrant operated with a single 16 element yagi on this band but dishes seemed as popular as yagis, particularly at 70 cm. According to the November issue of the Propagator (Illawarra ARS) the University of Wollongong has now received the insurance money to cover the loss and damage of equipment and buildings at Daplo, so perhaps VK2ALU will be back on beam again before too long.

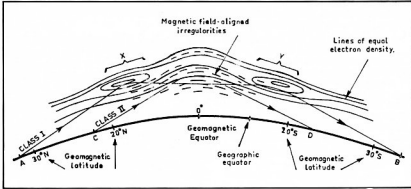
# RETURNING THE 50-52 MHz ALLOCATION

Roger Harrison VK2ZTB  
14 Rosebery St., Balmain 2041

The existence of widely scattered amateur stations that may contribute to data gathering in propagation research would provide a broad statistical base on which to study and define the characteristics and morphology of certain (perhaps new) modes of ionospheric propagation in the Australian-Asian and Australia-Pacific regions in the lower-VHF portion of the spectrum.

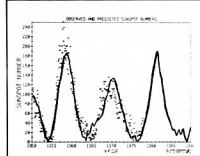
The allocation of the 50-52 MHz would materially assist in this regard, providing knowledge that would be of importance not purely in propagation research, but perhaps of more pragmatic significance in the area of defence strategy.

In a less rigorous scientific sense, the "discovery" of new modes of propagation and/or the extension of existing data records by amateurs using the 50 MHz allocation is a distinct possibility. Modern



ABOVE — FIGURE 2: The generally accepted propagation modes for afternoon-type (Class I) and evening type (Class II) transequatorial propagation. The regions in the F-layer marked X and Y indicate the 'equatorial anomalies' that will support propagation into the low-VHF region of the spectrum.

RIGHT — FIGURE 1: Predicted sunspot peak in 1981 may be as high as that in 1958. The solid line gives the Fourier series model (after Hill) predicted from observations from 1749 through 1975. The + symbols show observed monthly sunspot numbers from 1950 to October 1977.



WAVE	MODE	CLASS	LENGTH	FLM	FMS	DATE	NOVEMBER 1978
PREVAILING	MODE	CLASS	LENGTH	FLM	FMS	DATE	NOVEMBER 1978
FR	WV	CL	LT	LS	24	UT	TIME
0000						00	32.4
0100						01	35.4
0200						02	38.4
0300						03	39.7
0400						04	38.3
0500						05	35.4
0600						06	35.4
0700						07	34.7
0800						08	33.7
0900						09	32.7
1000						10	32.5
1100						11	34.1
1200						12	36.8
1300						13	32.3
1400						14	29.1
1500						15	26.7
1600						16	26.0
1700						17	22.6
1800						18	19.1
1900						19	16.3
2000						20	12.6
2100						21	7.2
2200						22	2.4
2300						23	31.3
2400						24	32.0
0000						00	27.7
0100						01	29.0
0200						02	30.0
0300						03	31.0
0400						04	32.0
0500						05	33.0
0600						06	34.0
0700						07	35.0
0800						08	36.0
0900						09	37.0
1000						10	38.0
1100						11	39.0
1200						12	40.0
1300						13	41.0
1400						14	42.0
1500						15	43.0
1600						16	44.0
1700						17	45.0
1800						18	46.0
1900						19	47.0
2000						20	48.0
2100						21	49.0
2200						22	50.0
2300						23	51.0
2400						24	52.0

LEFT:

FIGURE 3:

Circuit prediction issued by the Ionospheric Prediction Service. This is a 'GRAFEX' style prediction; note that the frequency scale extends from 3 MHz to 60 MHz, a recent change in form as most GRAFEX predictions cover 2-40 MHz.

VHF amateur stations are equipped to a much higher technical standard than existed 20 years ago (even 10 years ago), there has been an increase in the number of amateur stations populating the 6-metre band and an increased awareness of the possibilities available for unusual propagation, particularly as we approach the maxima of sunspot cycle 21. The number and extent, and the geographical distribution, of ionospheric paths that may support propagation in the lower VHF region, that may be "explored" by amateur operators using the common allocation of 50-52 MHz (where all the "action" is on the 6-metre band) is now considerably greater than for the last maxima of 1968-69 and the previous one, 1957-58.

## PROPAGATION RESEARCH

Research into Transequatorial Propagation (1), (2) has significantly advanced in recent years — hampered somewhat by the sunspot minima and the economic recession, and will undoubtedly get a boost over the period of the coming maxima. Much of the detailed morphology and geographical distribution of TEP is yet to be researched and there is considerable scope for research into the morphology of TEP in a number of geographic regions. It is known that TEP is geomagnetically sensitive in occurrence and distribution but only rela-

tively limited paths have been researched to date—Japan-Australia, USA-Australia and Cyprus-South Africa receiving the most attention. The Australia-North Africa, Australia-Central Asia and Australia-Trans-Pacific regions suffer from a dearth of data.

The morphology and characteristics of Japanese Archipelago-Australia trans-equatorial propagation in the lower to mid-VHF region of the spectrum is reasonably well detailed and understood at present owing to fairly intense and continuous studies undertaken since the early 1980s, largely because both areas have "free" governments and co-operative scientific studies have taken place—occasionally involving amateurs who used the 6-metre band (3).

However, the morphology of trans-Pacific and trans-Indian Ocean TEP is almost totally uncharacterised at present . . . if it exists. We know that occasions of trans-Pacific 50 MHz TEP have occurred, however insufficient data is currently available to provide any reasonably detailed picture. Instances of trans-Indian Ocean TEP in the lower VHF region are exceedingly rare, dating back 20 or more years. A bigger "population" on 50 MHz in critical areas of the world (i.e., North Africa; Mediterranean—Cyprus amateurs have 50 MHz; India; South-Central Asia, etc.), including Australia, would almost certainly add sufficient observational evidence of unusual propagation modes for

RIGHT: FIGURE 4A

LOWER LEFT: FIGURE 4B

LOWER RIGHT: FIGURE 4C

FIGURES 4A, 4B, 4C: Perth-Tokyo predictions for September/October/November this year show a promising pattern. Note how often the 'ordinary' F-layer mode supports propagation beyond 40 MHz. Peak median MUF in October reaches 41.3 MHz—and that's for two hops! On less than half the days of the month it is predicted to go considerably higher.

NAME	DEPTH-TIME	LENGTH	1922	24	DATE	SUPPLEMENT	1974	
UNIVERSAL TIME	IS	USED	12	16	24	UT	EMUF	ALP
PP	00	04	12	16	24	UT	EMUF	ALP
390.5	...	...	...	...	...	F 00	34.6	13.1
390.5	...	...	...	...	...	F 01	34.7	13.0
390.5	...	...	...	...	...	F 02	34.7	14.0
390.5	...	...	...	...	...	F 03	34.7	14.0
390.5	...	...	...	...	...	F 04	34.7	14.0
390.5	...	...	...	...	...	F 05	34.7	14.0
390.5	...	...	...	...	...	F 06	34.7	14.0
390.5	...	...	...	...	...	F 07	34.7	14.0
390.5	...	...	...	...	...	F 08	34.7	14.0
390.5	...	...	...	...	...	F 09	34.7	14.0
390.5	...	...	...	...	...	F 10	34.7	14.0
390.5	...	...	...	...	...	F 11	34.7	14.0
390.5	...	...	...	...	...	F 12	34.7	14.0
390.5	...	...	...	...	...	F 13	34.7	14.0
390.5	...	...	...	...	...	F 14	34.7	14.0
390.5	...	...	...	...	...	F 15	34.7	14.0
390.5	...	...	...	...	...	F 16	34.7	14.0
390.5	...	...	...	...	...	F 17	34.7	14.0
390.5	...	...	...	...	...	F 18	34.7	14.0
390.5	...	...	...	...	...	F 19	34.7	14.0
390.5	...	...	...	...	...	F 20	34.7	14.0
390.5	...	...	...	...	...	F 21	34.7	14.0
390.5	...	...	...	...	...	F 22	34.7	14.0
390.5	...	...	...	...	...	F 23	34.7	14.0
390.5	...	...	...	...	...	F 24	34.7	14.0
390.5	...	...	...	...	...	F 25	34.7	14.0
390.5	...	...	...	...	...	F 26	34.7	14.0
390.5	...	...	...	...	...	F 27	34.7	14.0
390.5	...	...	...	...	...	F 28	34.7	14.0
390.5	...	...	...	...	...	F 29	34.7	14.0
390.5	...	...	...	...	...	F 30	34.7	14.0
390.5	...	...	...	...	...	F 31	34.7	14.0
390.5	...	...	...	...	...	F 32	34.7	14.0
390.5	...	...	...	...	...	F 33	34.7	14.0
390.5	...	...	...	...	...	F 34	34.7	14.0
390.5	...	...	...	...	...	F 35	34.7	14.0
390.5	...	...	...	...	...	F 36	34.7	14.0
390.5	...	...	...	...	...	F 37	34.7	14.0
390.5	...	...	...	...	...	F 38	34.7	14.0
390.5	...	...	...	...	...	F 39	34.7	14.0
390.5	...	...	...	...	...	F 40	34.7	14.0
390.5	...	...	...	...	...	F 41	34.7	14.0
390.5	...	...	...	...	...	F 42	34.7	14.0
390.5	...	...	...	...	...	F 43	34.7	14.0
390.5	...	...	...	...	...	F 44	34.7	14.0
390.5	...	...	...	...	...	F 45	34.7	14.0
390.5	...	...	...	...	...	F 46	34.7	14.0
390.5	...	...	...	...	...	F 47	34.7	14.0
390.5	...	...	...	...	...	F 48	34.7	14.0
390.5	...	...	...	...	...	F 49	34.7	14.0
390.5	...	...	...	...	...	F 50	34.7	14.0
390.5	...	...	...	...	...	F 51	34.7	14.0
390.5	...	...	...	...	...	F 52	34.7	14.0
390.5	...	...	...	...	...	F 53	34.7	14.0
390.5	...	...	...	...	...	F 54	34.7	14.0
390.5	...	...	...	...	...	F 55	34.7	14.0
390.5	...	...	...	...	...	F 56	34.7	14.0
390.5	...	...	...	...	...	F 57	34.7	14.0
390.5	...	...	...	...	...	F 58	34.7	14.0
390.5	...	...	...	...	...	F 59	34.7	14.0
390.5	...	...	...	...	...	F 60	34.7	14.0
390.5	...	...	...	...	...	F 61	34.7	14.0
390.5	...	...	...	...	...	F 62	34.7	14.0
390.5	...	...	...	...	...	F 63	34.7	14.0
390.5	...	...	...	...	...	F 64	34.7	14.0
390.5	...	...	...	...	...	F 65	34.7	14.0
390.5	...	...	...	...	...	F 66	34.7	14.0
390.5	...	...	...	...	...	F 67	34.7	14.0
390.5	...	...	...	...	...	F 68	34.7	14.0
390.5	...	...	...	...	...	F 69	34.7	14.0
390.5	...	...	...	...	...	F 70	34.7	14.0
390.5	...	...	...	...	...	F 71	34.7	14.0
390.5	...	...	...	...	...	F 72	34.7	14.0
390.5	...	...	...	...	...	F 73	34.7	14.0
390.5	...	...	...	...	...	F 74	34.7	14.0
390.5	...	...	...	...	...	F 75	34.7	14.0
390.5	...	...	...	...	...	F 76	34.7	14.0
390.5	...	...	...	...	...	F 77	34.7	14.0
390.5	...	...	...	...	...	F 78	34.7	14.0
390.5	...	...	...	...	...	F 79	34.7	14.0
390.5	...	...	...	...	...	F 80	34.7	14.0
390.5	...	...	...	...	...	F 81	34.7	14.0
390.5	...	...	...	...	...	F 82	34.7	14.0
390.5	...	...	...	...	...	F 83	34.7	14.0
390.5	...	...	...	...	...	F 84	34.7	14.0
390.5	...	...	...	...	...	F 85	34.7	14.0
390.5	...	...	...	...	...	F 86	34.7	14.0
390.5	...	...	...	...	...	F 87	34.7	14.0
390.5	...	...	...	...	...	F 88	34.7	14.0
390.5	...	...	...	...	...	F 89	34.7	14.0
390.5	...	...	...	...	...	F 90	34.7	14.0
390.5	...	...	...	...	...	F 91	34.7	14.0
390.5	...	...	...	...	...	F 92	34.7	14.0
390.5	...	...	...	...	...	F 93	34.7	14.0
390.5	...	...	...	...	...	F 94	34.7	14.0
390.5	...	...	...	...	...	F 95	34.7	14.0
390.5	...	...	...	...	...	F 96	34.7	14.0
390.5	...	...	...	...	...	F 97	34.7	14.0
390.5	...	...	...	...	...	F 98	34.7	14.0
390.5	...	...	...	...	...	F 99	34.7	14.0
390.5	...	...	...	...	...	F 100	34.7	14.0

NAME	DEPTH-TIME	LENGTH	1922	24	DATE	SUPPLEMENT	1974	
UNIVERSAL TIME	IS	USED	12	16	24	UT	EMUF	ALP
PP	00	04	12	16	24	UT	EMUF	ALP
390.5	...	...	...	...	...	F 00	34.6	13.1
390.5	...	...	...	...	...	F 01	34.7	13.0
390.5	...	...	...	...	...	F 02	34.7	14.0
390.5	...	...	...	...	...	F 03	34.7	14.0
390.5	...	...	...	...	...	F 04	34.7	14.0
390.5	...	...	...	...	...	F 05	34.7	14.0
390.5	...	...	...	...	...	F 06	34.7	14.0
390.5	...	...	...	...	...	F 07	34.7	14.0
390.5	...	...	...	...	...	F 08	34.7	14.0
390.5	...	...	...	...	...	F 09	34.7	14.0
390.5	...	...	...	...	...	F 10	34.7	14.0
390.5	...	...	...	...	...	F 11	34.7	14.0
390.5	...	...	...	...	...	F 12	34.7	14.0
390.5	...	...	...	...	...	F 13	34.7	14.0
390.5	...	...	...	...	...	F 14	34.7	14.0
390.5	...	...	...	...	...	F 15	34.7	14.0
390.5	...	...	...	...	...	F 16	34.7	14.0
390.5	...	...	...	...	...	F 17	34.7	14.0
390.5	...	...	...	...	...	F 18	34.7	14.0
390.5	...	...	...	...	...	F 19	34.7	14.0
390.5	...	...	...	...	...	F 20	34.7	14.0
390.5	...	...	...	...	...	F 21	34.7	14.0
390.5	...	...	...	...	...	F 22	34.7	14.0
390.5	...	...	...	...	...	F 23	34.7	14.0
390.5	...	...	...	...	...	F 24	34.7	14.0
390.5	...	...	...	...	...	F 25	34.7	14.0
390.5	...	...	...	...	...	F 26	34.7	14.0
390.5	...	...	...	...	...	F 27	34.7	14.0
390.5	...	...	...	...	...	F 28	34.7	14.0
390.5	...	...	...	...	...	F 29	34.7	14.0
390.5	...	...	...	...	...	F 30	34.7	14.0
390.5	...	...	...	...	...	F 31	34.7	14.0
390.5	...	...	...	...	...	F 32	34.7	14.0
390.5	...	...	...	...	...	F 33	34.7	14.0
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390.5	...	...	...	...	...	F 75	34.7	14.0
390.5	...	...	...	...	...	F 76	34.7	14.0
390.5	...	...	...	...	...	F 77	34.7	14.0
390.5	...	...	...	...	...	F 78	34.7	14.0
390.5	...	...	...	...	...	F 79	34.7	14.0
390.5	...	...	...	...	...	F 80	34.7	14.0
390.5	...	...	...	...	...	F 81	34.7	14.0
390.5	...	...	...	...	...	F 82	34.7	14.0
390.5	...	...	...	...				

NAME	DEPTH-TIME	LENGTH	1922	24	DATE	SUPPLEMENT	1974	
UNIVERSAL TIME	IS	USED	12	16	24	UT	EMUF	ALP
PP	00	04	12	16	24	UT	EMUF	ALP
390.5	...	...	...	...	...	F 00	34.6	13.1
390.5	...	...	...	...	...	F 01	34.7	13.1
390.5	...	...	...	...	...	F 02	34.7	13.1
390.5	...	...	...	...	...	F 03	34.7	13.1
390.5	...	...	...	...	...	F 04	34.7	13.1
390.5	...	...	...	...	...	F 05	34.7	13.1
390.5	...	...	...	...	...	F 06	34.7	13.1
390.5	...	...	...	...	...	F 07	34.7	13.1
390.5	...	...	...	...	...	F 08	34.7	13.1
390.5	...	...	...	...	...	F 09	34.7	13.1
390.5	...	...	...	...	...	F 10	34.7	13.1
390.5	...	...	...	...	...	F 11	34.7	13.1
390.5	...	...	...	...	...	F 12	34.7	13.1
390.5	...	...	...	...	...	F 13	34.7	13.1
390.5	...	...	...	...	...	F 14	34.7	13.1
390.5	...	...	...	...	...	F 15	34.7	13.1
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390.5	...	...	...	...	...	F 17	34.7	13.1
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390.5	...	...	...	...	...	F 20	34.7	13.1
390.5	...	...	...	...	...	F 21	34.7	13.1
390.5	...	...	...	...	...	F 22	34.7	13.1
390.5	...	...	...	...	...	F 23	34.7	13.1
390.5	...	...	...	...	...	F 24	34.7	13.1
390.5	...	...	...	...	...	F 25	34.7	13.1
390.5	...	...	...	...	...	F 26	34.7	13.1
390.5	...	...	...	...	...	F 27	34.7	13.1
390.5	...	...	...	...	...	F 28	34.7	13.1
390.5	...	...	...	...	...	F 29	34.7	13.1
390.5	...	...	...	...	...	F 30	34.7	13.1
390.5	...	...	...	...	...	F 31	34.7	13.1
390.5	...	...	...	...	...	F 32	34.7	13.1
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390.5	...	...	...	...	...	F 35	34.7	13.1
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390.5	...	...	...	...	...	F 61	34.7	13.1
390.5	...	...	...	...	...	F 62	34.7	13.1
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390.5	...	...	...	...	...	F 67	34.7	13.1
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390.5	...	...	...	...	...	F 69	34.7	13.1
390.5	...	...	...	...	...	F 70	34.7	13.1
390.5	...	...	...	...	...	F 71	34.7	13.1
390.5	...	...	...	...	...	F 72	34.7	13.1
390.5	...	...	...	...	...	F 73	34.7	13.1
390.5	...	...	...	...	...	F 74	34.7	13.1
390.5	...	...	...	...	...	F 75	34.7	13.1
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390.5	...	...	...	...	...	F 80	34.7	13.1
390.5	...	...	...	...	...	F 81	34.7	13.1
390.5	...	...	...	...	...	F 82	34.7	13.1
390.5	...	...	...	...	...	F 83	34.7	13.1
390.5	...	...	...	...	...	F 84	34.7	13.1
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390.5	...	...	...	...	...	F 87	34.7	13.1
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390.5	...	...	...	...	...	F 89	34.7	13.1
390.5	...	...	...	...	...	F 90	34.7	13.1
390.5	...	...	...	...	...	F 91	34.7	13.1
390.5	...	...	...	...	...	F 92	34.7	13.1
390.5	...	...	...	...	...	F 93	34.7	13.1
390.5	...	...	...	...	...	F 94	34.7	13.1
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390.5	...	...	...	...	...	F 115	34.7	13.1
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390.5	...	...	...	...	...	F 144	34.7	13.1
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390.5	...	...	...	...	...	F 176	34.7	13.1
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390.5	...	...	...	...	...	F 178	34.7	13.1
390.5	...	...	...	...	...	F 179	34.7	13.1
390.5	...	...	...	...	...	F 180	34.7	13.1
390.5	...	...	...	...	...	F 181	34.7	13.1
390.5	...	...	...	...	...	F 182	34.7	13.1
390.5	...	...	...	...	...	F 183	34.7	13.1
390.5	...	...	...	...	...	F 184	34.7	13.1
390.5	...	...	...	...	...	F 185	34.7	13.1
390.5								



scientific institutions to advance research further.

Some HF backscatter ionospheric sounder research carried out by Queensland University from Brisbane in the 1960s has provided about the biggest body of data in this area to date, but does not cover a sunspot maxima (let alone a maxima and minima) nor did it extend into VHF.

Then again, research into propagation involving the southern "equatorial anomaly" of the ionosphere (which assists the TEP mode), which will undoubtedly assist 50 MHz propagation over odd paths in the southern hemisphere and certainly across the equatorial zone, is lacking. This zone of the ionosphere is important for a number of reasons—particularly in defence strategy as we shall see later. Complex propagation modes exist involving reflections from the equatorial anomalies of the ionosphere and the dense E-layer formations in the magnetic equatorial zone. These complex modes often support propagation in the lower VHF region, and have only recently been researched and identified. Further incidences of propagation, perhaps involving backscatter modes, in the 50 MHz region may provide additional research data or "jumping off" points for further research.

A recent (unpublished) paper by Ken McCracken VK2CCX, titled "Conduct of a Systematic Investigation of VHF/UHF Propagation Modes by the Amateur Service in Australia" (4), called "Project ASERT", details a method by which Australian amateurs may materially assist propagation research in a scientific manner. To the writer, the return of the 50-52 MHz allocation would greatly benefit this project.

The granting of 50-52 MHz to Australian amateurs would not only put them on parity with the same allocation in other areas of the world—particularly South Africa, South America, the South Pacific Islands, Japan and the US, together with efforts to have the allocation released in India and perhaps Russia, could materially assist research into the morphology of ionospheric propagation modes in the Australasian sector of the world.

Ordinary "extension" of F2 mode propagation (as propagates the HF range) is now routinely included in ionospheric predictions. Most "GRAFEX" style (computer plotted) Ionospheric Prediction Service charts are now produced with a frequency scale spanning 2 MHz to 40 MHz. Recently, the IPS have been putting out predictions with frequency scales covering 3 MHz to 60 MHz! (See example.) Many paths show extensions of F-layer propagation beyond 40 MHz at present, and the picture will certainly improve as we approach the maxima. The Australian to Central Asia (Novosibirsk, Russia being the terminal) predictions are of great interest. Complex ionospheric modes are almost certainly involved in extending propagation at times

and to frequencies beyond the purview of the predictions. Again, the 40-60 MHz region of the spectrum is important and a 50 MHz allocation, coincident with the allocation in other countries, would be an advantage.

#### DEFENCE SIGNIFICANCE

Research into TEP and the propagation characteristics of the equatorial ionosphere is particularly applicable to Australia in a number of practical ways, not just in "pure" research. And this is secondarily of importance in itself as money and resources for research projects is granted to those which have practical or "pragmatic" goals—particularly in the short term. A pragmatic benefit from the allocation of 50-52 MHz to Australian amateurs lies in the area of its possible contribution to defence strategy.

A research project such as Project ASERT could provide propagation data, as mentioned previously, on the lower VHF region for equatorial and transequatorial circuits to the north of Australia.

Over-the-Horizon radar systems (5), suitable for early defence warning for Australia, are affected by equatorial and transequatorial propagation. Although currently using the HF part of the spectrum, OTH radar systems may, in the future, extend into the lower VHF region. In any case "odd" ionospheric propagation modes uncovered in the 50 MHz region affect the HF spectrum as well and may be more easily identified at 50 MHz.

VHF propagation in the 30-60 MHz region is of defence significance in another way. Military VHF communications in the Central Asian-China-Japan region may be monitored at times of enhanced propagation. Indeed, this is already done. Contributions to the study of the morphology of VHF propagation in this area would clearly have a bearing on military communications surveillance activities. Again, the return of the 50-52 MHz allocation is a prerequisite to providing assistance to such research, perhaps through Project ASERT. Besides, it's apparent that, if we provide ample evidence of enhanced propagation on the lower VHF region in these parts of the world, defence communications is likely to move elsewhere owing to the possible decreased security!

#### FUTURE COMMUNICATIONS

##### POTENTIAL OF 40-60 MHz REGION

The communications potential of the 40-60 MHz region has been explored in the past in a practical, but limited, way. An experimental VHF propagation warning system was run as a trial by the Australian Ionospheric Prediction Service during March 1972. Some amateurs may remember participating in the experiment. In the report issued by the IPS on this experiment, "An Experimental VHF Propagation Warning System", by L. F. McNamara, IPS-R18 (6), Dr. McNamara states that "... at times communications on transequatorial circuits can be achieved at fre-

quencies as much as 20 MHz above the predicted MUF (maximum usable frequency)" (from the Appendix). In the summary to this report (page 13), Dr. McNamara makes a number of observations I consider of importance to my arguments in support of the return of 50-52 MHz. They read as follows:

"The long term predictions of the probability of occurrence of TEP modes on various types of circuit were found to be reasonably accurate, even though they were based on very little data. More accurate predictions can only be made when more observational data have been obtained." (My emphasis.)

"In retrospect, it can be seen that the TEP part of the WS (warning system) could be improved by:—

"1. Monitoring at Townsville all possible northern hemisphere transmitters operating between about 45-55 MHz and noting their frequencies, geographical locations and approximate signal strengths.

"2. Using the signal characteristics of the JATIGY beacon (on 50.1 MHz) transmissions when they are received at Townsville to distinguish between the two possible TEP modes."

The significance of the 50-52 MHz band is readily appreciated. The assistance of Australian amateurs in this project was also acknowledged.

Mention of this warning system experiment, and how TEP can be used to improve signal conditions and reliability on transequatorial paths was mentioned in a paper by D. G. Cole and L. F. McNamara published in the March 1975 issue of the Proceedings of the IREE (1). In section five of this paper, headed "The Effect of Spread F on Ground and Satellite Circuits", Cole and McNamara say:

"If range spreading is present the transequatorial circuit performance can be improved in two principal ways. First, since the range spread is an indicator of likely VHF transequatorial propagation (TEP) an increase in frequency up to the VHF band (my emphasis) may allow propagation via the TEP mode. In this case the signal strength across the circuit will increase, to the extent that transmitter power may be reduced. A warning system using range spread as an indicator of TEP has been successfully tried."

By way of explanation, "Spread F" or "range spreading" is a phenomena observable on vertical-incidence ionospheric sounding equipment which plots the height variations versus frequency of the ionosphere using RF pulses reflected from the ionosphere. The record produced is called an "ionogram". When several closely spaced echoes are apparent over a range of frequencies and heights of the F-layer reflection on the ionogram, spread-F or range spread is occurring. The phenomena is produced by the reception of multiple echoes over a range of near vertical

[illegible][illegible][illegible]

ABOVE LEFT: FIG. 5A

angles from discontinuities in the ionosphere. The discontinuities contribute to severe fading problems.

ABOVE RIGHT: FIG. 5B

Correlation between signal characteristics on 21, 28 and 50 MHz would provide some observational and perhaps some quantitative data on the improvement possible as suggested by Cole and McNamara. Amateurs in Australia and Japan are ideally situated to provide such data. However, the 50-52 MHz allocation is not shared, although 52 MHz could be used. However, the incidence of TEP at 50 MHz is known to be greater than 52 MHz and more stations use the 50 MHz allocation in the northern hemisphere around the Japanese Archipelago.

LEFT: FIG. 5C

**FIGURES 5A, 5B, 5C:**

Townsville-Tokyo predictions for September/October/November also show a promising pattern. Here too, the 'ordinary' F-layer mode supports propagation beyond 40 MHz for part of the month. However, the median MUF in October peaks at only 39.1 MHz.

## SUMMARY

The return of the 50-52 MHz allocation to Australian amateurs would materially benefit the Australian community, in defence, in scientific and in communications areas. The poor suitability of this region of the spectrum to television broadcasting use has been demonstrated on many occasions in the past and is likely to suffer increasingly as we advance towards the maximum of sunspot cycle 21. Returning 50-52 MHz to the Australian amateur service would serve a more useful purpose than maintaining it as part of a non-standard TV broadcasting allocation.

Putting Australian amateurs on a parity with other major nations and regions in



regard to the 6 metre band allocation would see many benefits flow from such a decision in the years to come.

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# LITTLE BOXES

One of the things which deters many experimenters who would otherwise build some equipment is the imagined difficulty in doing the mechanical work such as making a chassis and a box for the equipment they are building. I say imagined difficulty because it is often thought that to do sheet metal work one has to have an expensive workshop with all kinds of bending and cutting tools.

In actual fact, it is possible to make very good looking and perfectly functional boxes with the simplest of tools. Figure 1 shows how simple these tools can be. All that is needed is a couple of pieces of steel angle iron about 18 in. long, a clamp which can be bought at any hardware store (about a four inch clamp will do) and the kind of vice which can be found in practically every backyard garage. With these tools it is possible to bend aluminium sheet up to 18 gauge and if you want to use steel or galvanised iron, up to about 20 gauge. The sheet is simply placed between the angles as shown in Fig. 1 and the sheet is pushed over with one hand while the metal at the bend is gently hit with a hammer to work it over to a sharp bend. Fig. 1 shows the sheet of metal in position with the second bend completed. This particular box will have four bends and is about the simplest and most useful type there is. But it is not the only type of box which can be made. It is possible

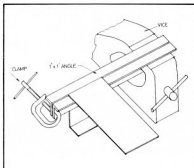


FIGURE 1

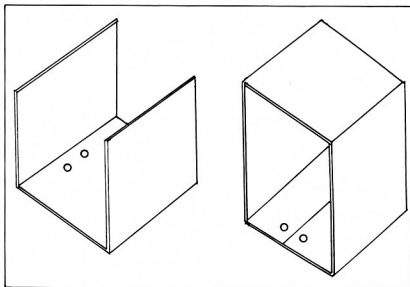


FIGURE 2

to make a wide variety of boxes and once you start you'll soon get the hang of it.

Fig. 2 shows the completed box. It is in two sections, one being the outer casing and the other the front and back panels and the chassis. You can see it is a very simple and convenient arrangement. Knobs and switches can be mounted on the front, and plugs and sockets can be mounted on the back and the circuit board or whatever can be mounted on standoffs on the main part of the chassis. The completed chassis can then be slid into the outer casing and a couple of screws through the outer casing into the chassis are enough to hold them together.

For cutting the metal the normal tin snips can be used but if you take the trouble to get a couple of old car springs and file the edges — they are not too hard to file — and bolt the springs to a couple of pieces of 3 in. x 2 in. hardwood you can make a first class pair of shears.

Another useful thing to know is that if

you want to get a nice straight edge on a piece of aluminium sheet you can plane it with an ordinary wood plane as long as you are careful to take a very fine cut. The blade will not be damaged though it may need resharpening fairly often. Don't try the idea on steel or tinplate or you'll ruin the blade.

So don't be afraid to tackle sheet metal work even if you have only the simplest tools. There is nothing more satisfying than to see a home made box exactly the right shape and size, spray painted with an aerosol tin of hammertone or wrinkle enamel and have someone say, "Where did you buy that box? It's exactly the size I need."

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## INTRODUCTION

During recent years amateurs have had much success with simple 10 GHz equipment. Usually this has consisted of transmitters generating a mere 1-20 mW, receivers using point-contact diode mixers and with an IF bandwidth of 100-200 kHz, and horn or dish antennas having gains of 20-35 dB. Provided that the equipment is operated to take advantage of low-loss propagation modes, such as that over line-of-sight paths or of super-refraction via ducts, then contacts over paths hundreds of kilometres long can be achieved virtually as a matter of routine.

Both calculations and direct measurements show that this size of equipment usually has a reserve of system gain of tens of decibels. This reserve means that it is not even necessary for the equipment to be working well for it to be successful: an overall efficiency of one per cent may be all that is required to cope with most low-loss paths. It also means that "compromise" techniques, such as the use of a Gunn oscillator as a self-oscillating mixer (and usually also as the transmitter), are quite satisfactory under these propagation conditions provided that the rest of the systems is working reasonably well.

However, for paths containing obstructions the path losses are normally very much greater. Losses 60-80 dB (1-100 million times) greater than those over unobstructed paths are not untypical. In order to work over these obstructed paths, the overall system gain has to be correspondingly increased and it becomes necessary to start counting every decibel. The receiver described below, although it is simple to construct, is intended to be efficient at this level. An unusual feature is the flexibility of the design. Because of its particular configuration, a small amount of the local oscillator power is radiated and obviously this can be modulated and used as a transmitter. By a simple modification the output power can be increased if desired, but at some expense of the performance of the receiver.

## DESIGN AND CONSTRUCTION

The receiver is shown schematically in Figure 1. It consists of a simple mixer assembly which is connected directly to a Gunn oscillator of the type which defines its cavity by an iris. The mixer uses a length of waveguide into which is fitted the mixer diode, the hot end of which is decoupled and feeds the IF amplifier in the conventional way. Diodes of the 1N23 type are recommended; those with later prefixes (E, F, G) are preferred for their lower noise figures. The signal-input end of the guide can be of any convenient length, and it is fitted with a

D. Evans G3RPE, and C. Suckling G3WDG

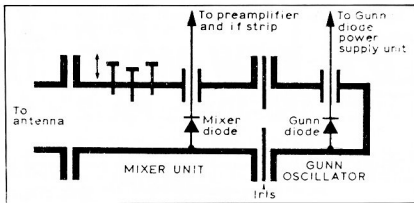


FIGURE 1: General arrangement of the receiver

matching screw or screws to match the mixer diode to the waveguide. The length of the waveguide at the local oscillator end is critical: it needs to be made electrically an odd number of quarter guide wavelengths, i.e.  $n\lambda/4$ , where  $n$  is 1, 3, 5, 7, etc., as is convenient. This rear cavity is closed by the same iris as is used to define the Gunn oscillator cavity.

A basic problem in the design of receivers is how to couple the local oscillator drive into the mixer while keeping to a minimum the amount of signal loss by its coupling with the local oscillator circuitry. A feature of the present design is that this isolation is provided simply by using the iris to undercouple the Gunn oscillator. Apart from the simplifying construction

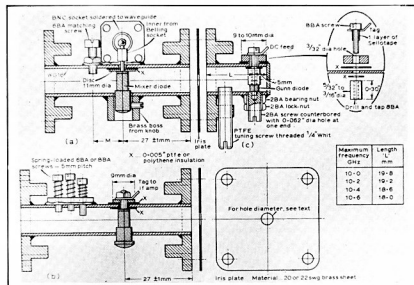


FIGURE 2: (a) One form of the mixer assembly. The single matching screw fits in one of two holes tapped close to the centre line of the guide, with the length M 11 mm for 10.0 to 10.1 GHz and 10 mm for 10.3 to 10.4 GHz. (b) An alternative configuration for the mixer. The position of the matching screws is not critical; they can be placed any convenient distance from the diode. (c) A modified design of Gunn oscillator.





somewhat smaller than the values calculated for  $3\lambda/4$  at these frequencies, namely 29.8 and 27.4 respectively.

The same procedure is recommended if it were desired to optimize the mixer assembly at another frequency, or to lengthen the cavity by making it  $5\lambda/4$  or  $7\lambda/4$  in order to fit a wavemeter.

Other Gunn oscillators which employed an iris at the output flange can be substituted directly. Examples are given in [e].

As noted earlier, some of the local oscillator power is radiated from the antenna port and may be used as a low-power transmitter. By increasing the size of the hole in the iris plate the amount radiated may be increased to make the transmitter more effective, although the reduced Q of the oscillator cavity resulting from this change means that the efficiency of the receiver will be impaired. Despite this, the performance of such equipment should be competitive with that of most other transceiver configurations. The size of the iris should not exceed about 6 mm diameter, otherwise the stability of the Gunn oscillator may be seriously affected.

#### POWER SUPPLY UNIT

The simplest practical PSU consists of a zener diode stabilized circuit as shown in Fig. 3. If, as in this case, the receiver local oscillator is not to be modulated, then the working voltage of the Gunn diode will be

close to that which produces maximum power output. This can be checked by operating the oscillator via a variable resistor (e.g. 47 ohm 3W) from a 10V 0.3A DC supply, and using the mixer diode current as a power indicator. A zener diode of the optimum working voltage and 1W rating can then be fitted, and the value of resistor R set so that the zener diode passes 50-100 mA with the Gunn diode connected.

It is of advantage to be able to frequency modulate the receive local oscillator with tone since this enables CW signals to be detected. If there is a chance that the unit will be used as a transceiver, if only as a low-power spare equipment, then it is worthwhile also to build in speech modulating facilities. A recently developed circuit produced by G8AGN/G8ZCO is given in Fig. 4. A deviation of about 100 kHz is usually employed, this being suitable for standard broadcast FM components.

#### RECEIVER PREAMPLIFIER AND IF STRIP

One of the advantages of having a separate receiver is that there is a wide freedom of choice for the IF frequency. In fact almost any frequency can be used in principle since its value will be taken into account during the final calibrating process. With single-ended mixers of the type described above, there are advantages in using a relatively high IF in the region of 100 MHz. A convenient form for this can be a

standard FM broadcast receiver, which may have limited AFC facilities built in — as well as a tape recorder. Some receivers of this type can tune 150 MHz, which is a useful IF in that the receiver can be made to tune 10,000-10,100 MHz on one channel, and 10,300-10,400 MHz on the other. Suitable preamplifiers using either BFY90 or 40673 devices are given in [5].

A useful check on the overall performance of the receiver is to measure the difference in its noise output when the antenna is pointed at the sky or at objects such as the ground. This technique is described briefly in [6].

#### REFERENCES

- RC = Radio Communication; M = RSGB VHF/UHF Manual, 3rd edn.
- [1] RC February 1976, p. 123.
  - [2] RC December 1972, p. 280; also M, Fig. 8.39.
  - [3] RC December 1972, p. 741; also M, Fig. 8.36 and 8.37. Horn antennas normally represent a well-matched load.
  - [4] RC May 1974, p. 288, Figs. 6, 7 and 8. Figs. 7 and 8 are also shown as Figs. 8.52 and 8.53 in M. Also RC September 1976, p. 667, Figs. 1 and 2.
  - [5] M, Figs. 8.74-8.78.
  - [6] RC July 1972, p. 541.

Reproduced from "Radio Communication", June 1978. ■

## THE 1979 FACT SYMPOSIUM

The "Future Amateur Communications Techniques" Symposium, held in Sydney in May last year, turned out to be one of the most important events in amateur radio for 1978. The success of this venture has created a demand for a "return" performance.

Accordingly, the 1979 FACT Symposium will be held over the long week-end of 29, 30 September-1 October this year at a venue in Sydney, to be announced.

This year's FACT Symposium will again be organised by Roger Harrison VK2ZTB, and the NSW VHF and TV Group Committee.

#### CALL FOR PAPERS

The organisers invite any amateurs, or interested persons, wishing to present a paper at the 1979 FACT Symposium to present a written abstract or synopsis on a topic of your choice—but related to communications techniques—to the committee by or before 30 May, 1979. Successful papers will be judged on originality, informativeness, possible future importance and amateur applications.

It is intended to publish the Symposium Papers before the event this year.

To enable interstate amateurs, who may not be able to attend, to contribute to the Symposium, the committee invites abstracts from authors who, if accepted, would be invited to submit a paper for publication in the Symposium proceedings.

For further information, contact the FACT Symposium Committee, C/- 14 Atchison Street, Crows Nest, NSW 2065. ■

## ALL-BAND SCRAMBLE: COUNTRY STYLE

Not bad weather for a field day?

It's pretty good I guess!

What with jokers down from the country I'll be a great success.

There's a couple from up country —

by their looks it's Dad and Dave.

Heck! They're in the all band scramble — this'll be a rave!

By the looks of their equipment,

it oughta be condemned.

I'd like to see that rig receive —

Let alone it send!

That tuning gang is driven by

a length of cycle chain, wrapped aroun' a stick of wood!

They gotta be insane.

They're not using coax for their feed:

they're using some barbed wire!

Their SWR must be near 10 to 1.

And if it ain't — it's higher!

They've gotta couple of tractor springs

and using them for coils.

And every time they switch to CW —

The electrolytic boils!

For valves they've got a few light globes —

and it would be my guess

That the first valve that De Forest made,

is somewhere in that mess!

They don't use gens or batteries.

Or anything else as subtle!

For volts, they light a big log fire —

and heat a thermocouple!

Hey, mate! It's about to start.

Let's watch these country blokes.

I'd bet a monkey's uncle —

They'll be good for a couple of jokes!

Gez! Lookit that bloke pound the brass —

close to twenty words a minute!

At the rate he's making QSOs —

no one else is in it!

Great Scott! He's won the thing!!!!

with sixty-five or more.

an' none of them fancy amateurs —

comin' anywhere near his score!

I reckon I'll chat these blokes

and tell 'em what I've said.

'Bout them crummy commercial rigs

and how 'ome brew leaves 'em dead!!

—From Westlake R.C. Newsletter, Dec. 78. ■

# ISLE OF MAN

GD3PBD

A new prefix "GT" will be used during the period 0001h BST on 30th June 1979 to 23.59h BST on 8th July 1979. Many expeditions to the island are expected which will boost the efforts of the resident 50 or so licensed Manxmen. The Isle of Man Amateur Radio Society asks visitors to send them details as advice and assistance will be readily available; write to GD4FWQ, 20 Terrence Avenue, Douglas.

Rad. Comms., Jan. '79

The use of this new prefix is to mark the millenium of Tynwald, one of the most ancient legislative assemblies in the world. This comprised the King, two lawmen (later termed Deemsters), 24 Keys and the Freeman or Folk as fashioned on the Norse system of government when the island was conquered by King Orry — Godred Crovan. Tynwald is also remarkable for the retention of so much of its original form, procedure and ceremonial. Today, almost a thousand years later, it comprises the Lieut.-Governor representing the Sovereign, an appointed Legislative Council and an elected House of Keys.

Tynwald is not subject to the British Parliament (except in matters previously agreed between the two) but to the Sovereign. It enjoys legislative independence and the right to order the civil, judicial and financial administration of the island. A ceremonial is held each year on Old Midsummer Day, which is now July 5th, on Tynwald Hill, St. John's near Peel.

Mannannin Veg Veen, Mona of the Romans or Man is indeed a tiny island in the Irish Sea. From the top of Snaefell, some 900m high, five countries can be seen on a clear day as well as the rolling green hills of the island with its tree-clad glens. The climate is generally much milder than surrounding areas and helps to explain the main industry of summer tourism, assisted, no doubt, by the Casino. The island is even more famous for the international Motor Cycle TT races (dating from 1904) in August, during which many of its roads are closed to all other traffic.

On the way from Douglas to Castletown the road crosses a small creek where all visitors should salute "the little folk". Perhaps its long history of severe hardships,

conquering hordes and periods of isolation has much to do with superstitions. Nevertheless, Manxmen are proud of their island, of their beautiful music — especially Ellen Vannin, by Eliza Craven Green, of the early 19th century — and their service "to King and country".

Manxmen can be found in most places as their names testify — Christians of Pictarinn Island from the Bounty, Quayles, Caines, Clagues, Kennaughes, Quillians, Kellys and many more. Perhaps as famous are Manx cats and the three legs of Man emblem.

Nearly 30 years ago I worked a GD station but no way could I get a QSL card out of him as I needed it for some award or other. I even sent him cards made out ready for him to sign and return in the envelope supplied with IRCs. It took the visit of a friend of mine, some 12 years later, to collect it in person. That was an exceptional case, because the last time I joined in the Isle of Man ARS monthly meetings the talk was about QSLing during the excellent teas we enjoyed. A fine island, full of beauty, history and charm. ■

## EARLY DAYS IN RADIO

E. C. Reading VK2LT

"Karnak", Dunoon Rd., via Lismore 2840, NSW

As a result of our "Early Days" request from "Old Timers" on amateur activities in the years 1925-1935, the author has submitted the following story.

"My present call sign is VK2LT, which I got in 1963, having caught the bug again.

Owing to pressure of work and other hindrances I let my previous licence lapse (2RG) from 1925 to about 1929, my old licence was dated 14-2-1925, Certificate No. 67, signed by Radio Inspector W. T. Crawford, Chief Manager J. Malone.

I was fairly active during 1925 to 1927, was living in Bangalow then, not far from the sea.

In about the years 1920 to 1921 I built a small two cylinder engine with the help of my brother, who was with an engineering firm in Brisbane. The machining of some of the parts such as the crankshaft and boring out of cylinders was done in Brisbane; the rest was done by myself on a small lathe, which was also made mostly by my brother, and finished and put together by myself.

I became interested in radio in about 1921-1922, made several receivers, picking

up 2FC and 2BL, and entertaining the local townspeople, several of whom got me to make them a BC receiver. From then on I became interested in Amateur Radio, making several receivers, mostly picking up morse from ships, which helped me a lot to learn the code.

When I obtained my radio licence and was able to use a transmitter, I got on the air, using batteries for a power supply for a while. I then made a generator for the HT supply, which was connected to the two cylinder engine; it generated 800 volts 2 amps DC, and using batteries for the LT supply. I was on the air with the 50 watt Radiotron valve. I used this until the AC power was connected through to Bangalow.

I was fairly active during 1925 to 1927. Unfortunately none of the gear used has been kept. I have a few QSL cards. I think the best of the cards are at the Richmond River Society's Museum in Lismore. QSL cards still in my possession are: America (6AZY, 6CHY), Australia (8) VK2s, (6) VK3s, (4) VK5s, (4) VK7s; had more but they have been mislaid over the years; also (10) New Zealand cards.

My first receiver was 3 coils, 4 valves; transmitter 1 valve (200). Later the transmitter used a 50 watt Radiotron valve,

Hartley Circuit Power Supply, home-made transformer, stampings cut out with snips and trimmed up with a file, etc., 800 volts HT. The rectifier was a number of glass bottles filled with 20 mule team borax with electrodes of lead and aluminium. They were a beautiful sight, a lovely blue colour when the key was pressed. Wave-length 35-80-87 metres, aerial 35 ft., with 4 wires, 40 ft. fan-shaped counterpoise. Receiver used then low loss 3-coil, 2-stage AF. Later used Phone, using carbon mike; contacts mainly VK2s.

I have belonged to the local Summerland Radio Club since it began and am active on VHF using a Multi 7.

I have made several caravan trips around Australia. In 1967 used a Swan 350 with helical whip aerials, 20, 40, 80, and made many contacts and friends on the way. I was in contact with VK2BU, Newcastle, who kept our daughter, now at Raymond Terrace, informed of our progress, etc., and don't think we missed a "sked", mainly on 40 metres at around 7 p.m."

**Editor's Note:** Contributions from OTs regarding their early experiences, etc., around 1925-1935 (or earlier and later) are most welcome. (VK3UV.) ■

# NOVICE NOTES

## TESTING CAPACITORS FOR LEAKAGE

Gil Sones VK3AUI

Many capacitors found in older receivers and in TV sets being stripped for parts are leaky. However, the leakage is often not evident at the low voltage used by a conventional ohmmeter.

A simple check can however be made using a neon tube and a series resistor if a source of between 200 volts and 400 volts DC is available. Only a very small current is required to produce a glow in the neon tube. Thus leakage current and breakdown at typical working voltages may be readily found.

When the switch is pushed the neon will light and then extinguish as the capacitor charges. The duration and intensity of this charging flash gives an indication of the capacitance of the capacitor

1000 pF to 0.01 mF charge quickly with a small flash which may be easily missed.

0.1 mF charges with a noticeable flash.

1.0 mF charges with a very noticeable flash.

Thus you may also roughly gauge the order of the capacitance with a little practice.

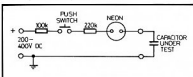
If the capacitor is leaky the neon will pulse rapidly if very leaky and slowly if leaky.

If the capacitor breaks down under voltage the neon will remain alight continuously.

Electrolytics cannot be tested in this manner as they depend on some leakage current to maintain their dielectric film.

Small disc ceramics are generally of too low a value. Also discs often fail due to plating flaking off the ceramic and so reducing capacity.

However the many paper and plastic film capacitors can be checked. They usually deteriorate due to failure of their sealing allowing moisture in.

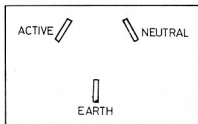


Capacitor leakage tester

With a little practice you will become quite adept at sorting out the good ones. At the same time you will probably be able to predict from the look of the capacitors which ones are crook. This skill used to be put to good account by TV servicemen in fixing up the older style of TV sets.

## AC MAINS PLUG CONNECTIONS

Australian Standard AS3000 recommends that when viewed from the front of the outlet the pins should be Earth, Active, Neutral when rotating in a clockwise direction.



AC mains outlet

The cord flexible conductor colours are —

- Active — Brown.
  - Neutral — Light Blue.
  - Earth — Green or Green/Yellow.
- Older electric cord colours were —
- Active — Red.
  - Neutral — Black.
  - Earth — Green.



## ONE FLASH AND YOU'RE ASH

### JOTTINGS FROM WESTLAKES RADIO CLUB

Young members visiting the clubs for the first time get some wild ideas.

Back in the early days, one 12-year-old was very upset that he didn't get on with building his TV receiver in the second lesson!

The whole idea of attending the radio club at all is to learn the disciplines of electronics. Discipline is "doing as ordered".

Now nobody is going to order you about as if you were on the parade ground.

But all the experienced members will tell you that it is dangerous to assume that because you are a radio club member you will automatically know all about electricity.

The funny phrase, "One flash and you're ash!" is all too true when one thinks about mains electricity.

Mains electricity is present at the mains three-pin socket on the wall; inside the TV set, the radio set, the toaster, the mixer, the shaver and all other electrical appliances.

You can't see mains electricity and this is what makes it so dangerous.

A spider or a snake or a shark look dangerous, so you keep out of the way of them if you are wise.

But mains electricity is much more dangerous than all of them and you can't even see it!

Then what should you do?

It is just as stupid to be afraid of mains electricity as it is to think that it's harmless.

It is much better to treat it with respect. Make it your servant but *never* assume that it is your friend, because mains electricity can kill you.

I'll tell you a true story about how dangerous it can be.

Years ago, when the club was very young, one member, about 13 I suppose, mistakenly thought that because he had had a few lessons in the Elementary class he knew all about wiring up a three-pin plug.

His confidence nearly caused the death of his father.

The house in which he lived had been wired so that a power point on the wall had no switch. This was dangerous in itself but that's only part of the tale.

This boy, thinking that he would do a good turn for the family, set about putting a new plug on the mains lead to the refrigerator. He just connected the three wires to the three pins.

If you think about it mathematically, you can imagine that there would be many ways to do it and still finish up with some degree of safety. But this boy connected the red active lead to the earth pin. His father arrived home just as he finished. He took the lead from the boy because he didn't know about these things either. He plugged it in and reached for the door handle to see if the light came on. Fortunately, someone pulled out the plug soon enough. But it could have been fatal. DON'T DO IT UNTIL YOU HAVE BEEN SHOWN HOW.

From Westlakes RC Newsletter, February 1979.

## BOOK REVIEW

### RADIO FREQUENCY INTERFERENCE HOW TO IDENTIFY IT AND CURE IT

With the amount of electronic equipment installed in the average home increasing every year the identification of RFI and its elimination is becoming more important. This ARRL booklet will show you how to identify the interference, find its source and suggest means for its elimination — often in the equipment being interfered with, sometimes in the transmitting device.

For many years the producers of electronic power generators have been conscious of the need to produce equipment to a high standard which does not produce "spurious" outputs.

Makers of reproduction equipment have, in many instances, because of a desire to produce such equipment at low cost, been prone to overlook the effects that a nearby source may have upon their products.

All aspects of the problem are dealt with in this sixty-four page publication.

Publisher: The American Radio Relay League Inc., Newington, Connecticut, USA.

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- BIG DUMMY Oil Cooled 2KW Dummy Load \$43

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- MFJ-943 Same as 9418 but less Meter, switch and Mounting bracket \$109
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- \* 100 watts minimum output 10 dB minimum gain.
- \* Fully protected against poor load VSWR, overheating and excessive or reverse rail.

- \* Equipped with RF VOX and manual override.
- \* Frequency Bandwidth 435 MHz — 15 MHz @ — 1dB.
- \* 10 watts nominal input for 100 watts output.

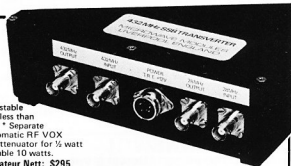
PRICE  
AMATEUR NETT:  
\$395.00

## Transverter Model MMT 432/144'S'

UTILIZING an IF of 144MHz \* 10 WATTS DRIVE of 1/2WATT \* VOX OPERATED, TWO SELECTABLE RANGES 432 - 434/434 - 436 MHz. FEATURES EXTENDED COVERAGE FOR OSCAR 8

FEATURES: High quality double-sided glass fibre printed board \* Highly stable zener controlled oscillator stages \* PIN diode aerial changeover relay with less than 0.2 dB through loss \* extremely low noise receiver converter, typical 3 dB \* Separate receive converter output gives independent receiver facility \* Built-in Automatic RF VOX with override facility \* Built-in 10 watt 144 MHz termination, selectable attenuator for 10 watt \* Use of the latest state of the art Power Amplifier transistors provide reliable 10 watts continuous output.

MODEL MMT 432/144 'S' Price Amateur Nett: \$295



## Transverter Model MMT 432/28'S'

FEATURES EXTENDED COVERAGE FOR OSCAR 8

Second Crystal Oscillator gives two ranges: Low 432 — 434 MHz — High 434 — 436 MHz programming available to either Transmit/receive both Low, both High, or a mixture of the two. Adjustable Drive Level is now provided by an input potentiometer. Optional RF VOX. Power Output 10 watts minimum \* 28 MHz IF \* Drive 1 mW to 500 mW \* Aerial Changeover by PIN diode switch \* Modern Microstrip Techniques \* Power requirements 12 volt nominal at 150 mA 2.5 amp peak \* Case size 187 x 120 x 53 cm \* Spare 432 input socket.

MODEL MMT 432/28 'S' Price Amateur Nett: \$245 MODEL MMT 144/28 Price Amateur Nett: \$185

### NEW READY-TO-OPERATE MODULES AVAILABLE IN THE SALES PROGRAM OF VHF COMMUNICATIONS.

All modules are enclosed in black cast-aluminium cases of 13cm by 6cm by 13cm and are fitted with BNC connectors. Input and output impedance is 50 ohms. Completely professional technology, manufacture, and alignment. Extremely suitable for operation via satellite or for normal VHF/UHF communications.

**10 METRE MOSFET CONVERTER:** Input frequency range 28 - 30 MHz \* IF output frequency 144 — 146 MHz \* Overall gain 15 dB min \* Overall noise fig. 1.8 dB \* DC Power requirements 11 — 13.8V at 50 mA. PRICE AMATEUR NETT: \$45.00

**6 METRE MOSFET CONVERTER:** Featuring 24 MHz local oscillator output for transverter use. Input frequency 52-54 MHz, I.F. Output frequency 20-30 MHz. Typical gain 30 dB. Noise figure 2.5 dB. Typical image rejection 65 dB. Crystal Oscillator frequency 24 MHz. Power requirements 12 volt  $\pm$  25% at 35 mA. MODEL MMC52/28LO PRICE AMATEUR NETT: \$49.00

**2 METER MOSFET CONVERTER:** Noise figure typ. 2.8 dB. Overall gain typ. 30 dB. IF: 28-30 MHz. 9-15 V 20 mA. PRICE AMATEUR NETT: \$45.00

**DUAL RANGE 432 — 434 MHz & 434 — 436 MHz Converter.** Type MMC 432/28 'S' & MMC 432/144 'S' Input frequency ranges 432-434 MHz (low), 434-436 MHz (high). I.F. output frequency 28-30 MHz or 144/146 MHz. Typical gain 30 dB. Noise figure 3 dB maximum, D.C. Power requirements 11-13.8 volts, 12.5V nominal. Current consumption 50 mA maximum. PRICE AMATEUR NETT: \$67.00

**1296 MHz CONVERTER:** Microstripline, Schottky diode mixer. IF: 28-30 MHz or 144-146 MHz. Noise figure: typ. 8.5 dB. Overall gain 25dB. Power requirements: 12 volts DC  $\pm$  25% at 50 mA. PRICE AMATEUR NETT: \$65.00

**VARIATOR TRIPLER 432/1296.** Max. input at 432 MHz. 24 W (FM,CW) — 12 W (AM) Max. output at 1296 MHz. 14 W. PRICE AMATEUR NETT: \$74.00

**500 MHz COUNTER Model MMD050/500** PRICE AMATEUR NETT: \$175.00

**BNC CONNECTORS** — Excellent quality, fully imported from U.K. U.S. Mil. No. UG88E/U. PRICE AMATEUR NETT: \$1.35 each.

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\$2.00

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FRED SWART — VK3NBI

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and we will try to pleasantly surprise you!!

## AMTENEER.

\$159

"LOOK"

HI-Q Balun  
For dipole or beam.  
ONLY \$15.95

15-10 M. AM4-2.



Support CHIRNSIDE ELECTRONICS  
and you will support WARC also.

CHIRNSIDE ELECTRONICS  
are now

Victorian distributor for  
SKYBANK Mobile Antennas.

### PRICE LIST:

SKY 80 6 feet long 3.5 MHz	\$28
SKY 40 3 feet long 7.060	\$26
SKY 20 6 feet long 14.150	\$26
SKY 15 6 feet long 21.100	\$25
SKY 10 6 feet long 28.500	\$24

## EMOTATOR ROTATORS

201 AXX. New Model.....	\$175
103LXB. Medium Duty.....	\$169.
80 M. Resonator.....	\$22
502CXX. Heavy Duty.....	\$369.
1102MXX. Extra Heavy Duty.....	\$395.
1103MXX. Extra Heavy Duty.....	\$395.
502 Mast Clamp.....	\$32.
103 Mast Clamp.....	\$32.
VCTF-7. 7 Core Cable, per Metre.....	\$1.20
VCTF-6. 6 Core Cable, per Metre.....	\$1.00.
VCTF-5. 5 Core Cable, per Metre.....	\$0.90.

## ACCESSORIES

SWR-200. Large dual meter SWR.....	\$75.
500G. 5 position coax switch.....	\$39.
Diana 2 Pos. Coax Switch.....	\$25.
LP-42. Drake Low Pass Filter.200W.....	\$19.
TWS-120. 2 Position slide coax switch.....	\$18.
M330. Diana Mic. compressor.....	\$70.
5D-bb. Foam filled coax double shielded 2.02 dB loss per 100 feet.....	\$1.20 per metre.
RC-5BU. Thin coax. per metre.....	50 c.
PL-259. to suit 5D-FB.....	\$1.50
FF-501DX. Low Pass Filter.....	\$40.
Bumper Mounts 3-Bx 24 Thread.....	\$10.
Wide Range of Coax Cable and Connectors in stock.	
MC-440. RF Speech Processor.....	\$135
Porcelain Ego Insulators.....	50c.
CN-620 DAIWA SWR Meter.....	\$95.
WESTON trap-set 80-10 M.incl.balun.....	\$50.
HI-Q Balun 1:1.....	\$15.95

## ICOM

IC-701. HF 160-10M Transceiver.....	\$1299.
IC-202E. SSB Portable Transceiver.....	\$229.
IC-225. FM 10 Watts 2M Mobile Transceiver.....	\$299.
IC-211. ALL Mode 2M Transceiver.....	\$799.
IC-280. Mobile 2M.Digital Transceiver.....	\$449.
IC-701PS. Power Supply.....	\$250.

2 80-10M. Traps for dipole. **\$50.-**  
Complete with balun and insulator.

## KENWOOD

THESE ARE KENWOOD RECOMMENDED RETAIL PRICES  
NOT OUR PRICES!!!!

TS-520S 160 10 M. Transceiver AC.....	\$755
VFO-520S Ext. VFO for 520.....	\$163
DS-1A DC-DC for TS-520.....	\$79
TS-820S 160 10 M. Transceiver.....	\$1392
VFO-820S Ext.VFO for 820.....	\$195
TS-120V 80-10 M. Transceiver.....	\$630
VFO-120V Ext.VFO for 120.....	\$148
PS-120 Power supply for TS-120.....	\$110
SP-120 Ext speaker TS-120.....	\$40
TL-922 Linear Amp.....	\$1399
SM-220 Station monitor scope.....	\$440
BS-8 Panoramic adaptor for 520S.....	\$66
BS-8 Panoramic adaptor for 820S.....	\$66
AT-200 SWR meter, antenna coupler.....	\$185
RD-300 Dummy load 150 mW-300W.....	\$79
TR-762S 2 M.-25 W. Digital.....	\$465
MC-10 Hand mic.....	\$21
MC-35S Hand mic. noise cancel.....	\$26
MC-50 Desk mic.....	\$49
YG-3395C CW filter for 520.....	\$59
YG-88C CW filter for 820.....	\$59
YG-88C CW filter for TS-120.....	\$38

## HI-MOUNT KEYS

HK-708.....	\$21.
HK-707.....	\$23.
HK-706.....	\$25.
HK-710.....	\$49.

## YAESU

RSL base mast inc. 2 M.....	\$29
80 M. Resonator.....	\$22
40 M. Resonator.....	\$21
20 M. Resonator.....	\$20
15 M. Resonator.....	\$20
10 M. Resonator.....	\$20
FT-101Z 160-10 M Adj. N/B IF shift.....	\$775
OPTIONAL FAN.....	\$39
DC-DC for 101Z.....	\$79
FT-7.....	\$389
FT-901MD Transceiver.....	\$1549
FT-901 Ext.VFO FT-901. FT-101Z.....	\$439
FC-901 Antenna coupler.....	\$269
YG-901 Panoramic adaptor, motor scope.....	\$499
TV-901 6M, 2M, 70 cm All inc.....	\$839
SP-901 Ext. speaker for 901-101Z.....	\$53
FRG-7000 Communication receiver.....	\$339
FRG-7000 Communication receiver.....	\$629
LF-2A Narrow band filter FRG-7.....	\$20
FT-7B 80-10 M. Transceiver 100W.....	\$639
YC-7B Digital display for FT-7B.....	\$123
YG-7A Hand Mic for FT-101Z.....	\$21
YD-148 Desk Mic for all Yaesu.....	\$49
YP-150 150 Watt dummy load and Watt meter.....	\$112
FL-110 Solid state amp. 160-10 M.....	\$239
FL-110B 1200 W. Amp.....	\$585
QTR-24 24 hour world clock.....	\$33
YC-500 Freq. counter.....	\$POA
FT-227R 2M. Digital transceiver.....	\$329
FT-227RA 2M. Scanning digital transceiver.....	\$399
FF-500X Low pass filter 2 kW.....	\$49
YO-101 Monitor scope for FT-101E.....	\$379
YC-601B Digital display. Freq counter FT-101E.....	\$279
FT-101E 160-10 M. Transceiver AC only.....	\$745
Optional X-tail filters FT-101Z, FT-101E.....	\$69

equipment sold by Chirnside Electronics is pre-sales checked and covered by 90 day warranty and expert after sales service.

All prices include Sales Tax. Freight and Insurance extra.  
Prices and specifications are subject to change without notice.

We handle and stock most Yaesu. Kenwood. Icom. Equipment.

CHIRNSIDE ELECTRONICS. 26 Edwards Road, Lilydale, 3140. phone (03) 726 7353.

# THE INTRUDER WATCH IN REGION 2

Air Chandler VK3LC  
Federal IW Co-ordinator.

**At the January meeting in Miami this year the ARRL adopted a resolution, the text of which I quote hereunder —**

On a motion they "unanimously VOTED that the Board of Directors commends the performance and contributions of those amateurs who are actively participating in the Intruder Watch programme and instructs the General Manager to give maximum support to this important activity, particularly during the remaining year to the World Administrative Radio Conference".

They go on to say — "During the past year, 1978, the FCC Treaty Branch was sent numerous reports concentrating upon

the all-too-familiar 40 metre foreign broadcast interference into exclusive amateur frequencies. The voluminous reports served as the basis for the reports sent to Washington, and we appreciate all that you have provided us. Please keep things going at your present level of activity as your continued reports will be of great assistance with regard to the ARRL efforts on behalf of amateur radio at the WARC sessions later this year in Geneva."

**This applies equally here in Australia too.**

It is becoming common knowledge that the Peoples Republic of China is contemplating legalising amateur radio, and it is therefore hoped that after WARC those

annoying broadcasts may be minimised, especially if they interfere with their own amateurs!

I am appealing for somebody to take over the Federal Co-ordinator position.

Ivor VK3XB has all he can handle with the VK3 co-ordination, and with my change of QTH and mounting commitments I have all that I can handle with Region 3.

Will somebody come forth?

It does not necessarily mean a VK3. Anybody with some enthusiasm can do the job successfully.

How about it?

My new QTH is — 15 Point Avenue, Beaumaris 3193.

## QSP

### CALL SIGNS WITH ADDRESSES

A number of members wrote their call signs on the subscription notices when they sent them in with payment. Most of these were already on record but some were not and the membership records were duly amended — thank you.

A few asked why their call signs could not have been included with the computer name and address as printed on the subscription notice. The subscription notice is a once a year document but the AR address labels are used once each month. The call sign or SWL number is on the AR address label as an additional line which also includes membership details in the form of grade, Division, pro rata (not used yet — all are 00), mail distribution rate (not used yet — all are 00), mail distribution code, zone (not yet in use), call sign.

The subscription notices, however, have to fit into standard commercial window-faced envelopes of post office preferred size. The notices were pre-printed in bulk to take advantage of better price for bulk. The address data on the notice has to show through the window face but there must be some latitude otherwise problems arise in inserting the notice into the envelope and also latitude in trimming the notices to size must be allowed for.

If you take these factors into account you will observe that there is only sufficient space for three lines of print, hence the different addressing format for the AR address label where four lines can be used and still remain within the computer page formatting suitable for Cheshire machine labelling of AR labels. The call sign cannot be included after the surname on the subscription notices because of a limitation in the number of characters available to cope with long names such as apply to clubs, etc., and the need for the post code to stand out clearly.

Yes, the printer left no margin for error when printing the subscription notice name and address panel in relation to the right and left hand margins used for the printing on the notice. This introduced a trimming problem where a computer letter or two on the left side of the name and address became hidden out of view from the window face. The proof reading copy of the notice was fine but there were errors which required correction and the printer compensated by taking the print lines too far to the right. The fun and games we do have!

### AMATEURS vs. HAMS

Amateur radio is in a sense like the art of fishing. Anyone with a triple set of hooks, a 15 pound test line and a rod the weight of a telephone pole can eventually land his fish. The chap with the light tackle is up against it, but he gets more out of the game when he does catch one. A station running comparatively low power will never make the lists of high scoring stations in one of those RST races of course. And it is not likely that some amateurs, now we have the gear available to run legal limits and above, will ever again go back to luck and skill which are the alternatives to brute power — even if the multipliers or other condition do favour turning the gain down. Those of us with moderate output should make our weight felt just by getting on and into whatever action is taking place as well as accepting the fact that we will not win any prizes, but letting others know that with our handful of watts we are in there battling — not for a silver-plated medal but for the very perverse fun of making contacts.

The oft-used expression "this is what separates the men from the boys" should be turned around to read "what separates the radio amateur from the ham is the ability to talk".

From Westlakes RC Newsletter, February 1979.

## MAGPUBS

### WIA Car Stickers now available:

Send only 20 cents each — GET ONE NOW. Send only self-addressed stamped envelope with 20 cent stamp —

Direct to your Division or from Box 150, Toorak, Vic. 3142.

### New rates for 1979 subscriptions:—

VHF Communications by —	
Surface mail .....	\$8.20
Air Mail .....	\$12.40
Single issues, when available from Magpubs for 1978/79, will be each .....	\$2.10

MAGPUBS — A WIA Membership Service, Box 150, Toorak, Vic. 3142.

## GEELONG RADIO AND ELECTRONICS SOCIETY

The Geelong Radio and Electronics Society enjoyed a good participation of many new members during the recent J. Moyle Memorial Field Day.

The venue was at the Scout Camp, Eumerralla, near Angles.

Regular meetings are held at the Society's rooms on the Belmont Common.

Visitors are welcome. Mail enquiries may be directed to the Secretary, GRES, PO Box 962, Geelong, or ring Geelong 21 3658 for further information.



Reg VK3NOF with the TS120V on CW for VK3ANR

### TRADE HAMADS

For a very long time commercial advertising has not been accepted in AR Hamads, but as the result of discussions at the 1978 Federal Convention a decision was made to open up a "Hamads-Trade" section. The rate will be \$10 for 4 lines plus \$2 per line (or part thereof), minimum charge \$10, pre-payable. Copy is required by the first day of the month preceding publication. This will mean that in future ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.



# MEET THE "THUGS"

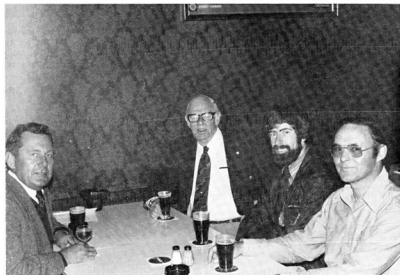


PHOTO No. 1

PHOTO 1. L. to r. — Maurice VK3AIG, John VK3ZAZ, Doug VK3ZOO, Fred VK3YNC — whose shout next?

PHOTO 2. "If you missed the floor show, just wait until you see the waitress", seems to be the Div. President, Eric VK3ZZN's thoughts.

PHOTO 3. Derek VK3ZVG, Div. Treasurer, "This is what I call general business."

The "Thugs" is a name adopted by members of the VK3 Division Thursday Group Socialisers. They meet from approximately 12 noon to 2 p.m. each Thursday for luncheon in one of the local hotels near the VK3 rooms.

Attendance varies from six to 20 at times, and includes some YLs and XYLs.

Come and join the "Thugs" for a bit of socialising if you are a WIA member and travelling near the area on Thursdays.

Photos courtesy Mike O'Burtill VK3WW, 3 Maxwell Street, Lator, Victoria, and to whom enquiries re the "Thugs" may be directed.



PHOTO No. 2



PHOTO No. 3

## AACP EXAM — FEBRUARY 1979

POSTAL AND TELECOMMUNICATIONS  
DEPARTMENT

AMATEUR OPERATOR'S CERTIFICATE  
OF PROFICIENCY

SECTION M (Theory), BOOK 2  
February 1979

(Time allowed — 2½ hours)

NOTE: SEVEN questions only to be attempted.  
Credit will not be given for more than  
SEVEN answers. All questions carry equal  
marks.

- With the aid of a circuit diagram, explain one method of producing single sideband suppressed carrier signals.
- Discuss the importance of carrier frequency stability in this type of transmission.
- Assisted by diagrams explain the theory of operation of a silicon-controlled-rectifier (SCR).
- Explain why interference to radio reception may be caused by equipment which employs SCR devices and suggest a method of reducing this type of interference.
- Describe with the aid of a diagram the operation of a reactance-modulator used to frequency modulate a transmitter.
- Does the power output of an FM transmitter vary with modulation?
- Is linear amplification necessary in the power amplifier stages of an FM transmitter?
- What is meant by the term "Dielectric Constant" in relation to a capacitor?
- Three capacitors of 2, 3 and 6 microfarads respectively are connected in series. Calculate the total capacitance of the group.
- Discuss briefly the losses which may occur in a capacitor.
- The tank circuit of an RF amplifier is tuned to resonate at 7 MHz. State, giving reasons, whether the plates of the variable capacitor have to be rotated in or out of mesh to retune the circuit to resonance at 7.1 MHz if the value of inductance is held constant.
- The tank circuit of an RF amplifier is tuned to resonate at 7 MHz. State, giving reasons, whether the plates of the variable capacitor have to be rotated in or out of mesh to retune the circuit to resonance at 7.1 MHz if the value of inductance is held constant.
- Explain why and how the anode current of a Class C radio frequency amplifier varies as the tank circuit is brought into resonance.
- State, giving reasons, whether the anode current of a PA stage will vary when the antenna coupling is reduced.

- Explain briefly the theory of radio transmission via the ionosphere.
- Discuss the effects on high frequency transmissions of the daily variations in the ionosphere, the seasonal changes and the sunspot cycle.
- Sketch and describe the constructional details of a permanent magnet moving coil type meter. Explain the theory of operation and show how the meter could be adopted to measure alternating currents.
- Describe, with the aid of a sketch, the operation of a type of microphone suitable for use at an amateur station.
- Draw a circuit diagram of a pre-amplifier suitable for use with a high-impedance microphone.
- A power amplifier stage of a transmitter operates with a grid current of 15 milliamperes through a 2000 ohms resistance to earth. The total cathode current is 115 milliamperes and the total operating bias is 90 volts. What is the value of the cathode resistor?

# LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

34 Toolangi Road,  
Alphington, Vic. 3078.  
8th March, 1979.

The Editor,  
Dear Sir,  
Thank you for the letter of 5th March informing me that I received the Technical Award for 1978.

I have pleasure in donating the amount involved towards the expenses of WARC 1979 and enclose a cheque for \$25 dollars.

All best wishes,

Your sincerely,

Roy Hartkopf VK3AOH.

1821 South Lakeshore Drive,  
Chapel Hill, North Carolina, USA.  
March 8, 1979.

The Editor,  
Dear Sir,  
Your February editorial covered the need for concise and non-ambiguous Amateur Service regulations but that is only a small part of the "over-regulated" situation we Australian amateurs are in. How about the outmoded regulation which prevents us using ASCII code for TTY transmission and transfer of microprocessor programs? Or the continuance of regulations preventing phone patch or third party traffic? It's significant that the latter regulations only exist in countries with governmental monopoly common carriers such as the former PMG. These carriers have an obsession in seeing that patch or third party "privileges" are not granted to amateurs in case they lose some business (in Canada and the US where patch and third party are allowed, studies have shown that no business has been lost).

In the PMG days, we had the unhealthy situation where they were both the regulators and the main beneficiaries of the regulations and in that environment it was virtually impossible to get equitable regulations. Now that a separate organisation, the P. and T. Department, is the regulator and supposedly has the interests of the whole community at heart, they will, hopefully, not continue these stifling regulations which only serve to suppress the growth of the amateur service.

[ASCII is permitted in VK—Ed.]

Leo Powning VK5ALP/W4.

5th March, 1979.

The Editor,  
Dear Sir,  
I would like to thank VK3AMK for his suggestions and corrections to the VK/ZL Contest 1978. Jock White of the NZART completed those rules and this year it's my turn. We try to give the entrants the kind of contest they want, and any suggestions we receive are most welcome. Now to some observations. 24 hours versus 48. Most operator's comments show a preference for 24 hours of operation. However I have included an 8 hour section this year to test for support.

Why start at any other number than 0017 Jock changed it. I do not know why. Australian produced rules always start at 001. Enough said. With the inclusion now of prefixes for scoring the serial test the listener very little as to how the other station is scoring.

For log checking, I am interested in the fact that a valid contact took place and was recorded for contest purposes and regulations. It could have been 5/7 ABC, 5/90000 or just 5/9. It makes little difference, so long as it was recorded by both operators correctly. The check of the contact is easily carried out by use of GMT in the log, without the aid of a typewriter. I agree we do not want this contact to turn into a message handling exercise. As to the GCR suggestion, this has been considered now for years. But what do you do when up to 50 per cent of the logs have to be reviewed BY THE CONTEST MANAGER, or simply reject them?

The prefix rule will be looked at, with JK1AA/5 being considered as JAS, for scoring purposes. JAS is the most common prefix in the "5" call area. But please keep in mind most rules need altering sooner or later.

I do not see the necessity for writing out a log three times, or even twice. A carbon copy for the station log and the original sent away to the contest manager is all that is required.

A contest manager's desire to receive logs (this manager anyway) mostly overrides the log being presented, as a model of neatness, beautifully presented, or on special paper. Just so long as I can read what is written and the format follows the rules, that's it. After you have received 400 to 500 overseas logs for checking in a contest, that are written in every conceivable way, on paper that ranges from high quality parchment to the cheapest flimsiest imaginable, in languages from Russian to Spanish, you become very adept at reading logs written in English (Australian) and its various forms.

I realise this may be a pill for some operators to take, preferring to enter a well presented log, but the fact remains you do not score any points for that. But I like to receive them.

It has been our intentions (NZART and WIA) to encourage participation in any possible way. Your suggestions are desired. This year the WIA is offering medals and medallions as well as certificates and trust this will give some operators the incentive.

Will any Club, Division or Group offer a trophy for the contest?

I'll leave you with a question, to which please write me your answers—Should we have contests?

Neil Penfold VK6NE.

WIA Contest Manager for VK/ZL Contest.

35 Rutland Street,  
Coorparoo 4151, Queensland.

The Editor,  
Dear Sir,

PHONE PATCHING!!

I am writing to invite your assistance in possibly obtaining information from Mr. Geoff Swift VK2NCJ/YGE, whose address is not known to me.

In describing his radio room and integrated units of equipment he mentions "a phone patch board".

I wonder if he would favour readers of AR with more information on this interesting device, i.e. Is it home constructed? Is it permanently connected to his telephone and how does it work? How does he use it? If it is a commercial unit, from whom can these be purchased?

I am aware that phone patch units are readily available in Australia in manufactured form. The Yeasu MS9P01 Phone Patch/Speaker is a typical example, but this is the first mention of a "phone patch board" as Geoff puts it.

They are, of course, widely used in the USA and Canada. In fact, I seem to have noted some references to inbuilt phone patch facilities as normal provision in some amateur transceivers.

I have on one occasion, during a visit to Canada, spoken from my motel room to a G3 in the UK!—via the station of an amateur equipped with a phone patch unit, and it functioned perfectly.

It is interesting to reflect that, given the phone number of an American amateur, I could, via International STD, call him and be patched back to VK on say 14 MHz, and have a QSO with a nearby amateur in my suburb! The possibilities are innumerable. Has anyone tried this sort of working?

G. Harmer VK4XW.

Editor's Note: The use of phone patch equipment in Australia is illegal under current P. and T. regulations (VK3UV).

The Editor,  
Dear Sir,

I would like to add my voice to those of VK2YA and VK377 (AR February 1979) in criticizing your article about the "Wooley Bum" club and add some further comments.

This kind of occurrence is the direct result of the lowering of the standard of the novice examination.

The last two novice theory exams have, in my opinion, been far too easy. And yet there is now talk of dropping the Morse requirement.

There has been some mention in AR recently of a lowering of standards of on-air operation, and yet there are those who want to further simplify the entrance requirements to Amateur Radio. It is this simplification which has allowed such elements as the Wooley Bum group to infiltrate the ranks of the Amateur Service. Fortunately, at present they form a small minority.

However if this trend is allowed to continue, their numbers will increase, the overall standards within the Amateur Service will fall, and those who oppose our allocation of frequencies will have more ammunition to use against us.

I strongly urge the WIA to press for the maintenance of a reasonable standard in all examinations for Amateur licences.

(Name and address supplied)

10 David Street East,  
Springwood 2777,  
1st March, 1979.

The Editor,  
Dear Sir,

I notice on page 57 of "QST", October 1978, that the Canadian administration is working on an entirely new Amateur Radio Syllabus for its examinations which are held FOUR times a year—while our Australian authorities can only "run" to half that number.

I note, too, that the Canadians propose "replacing the multiple-choice questions on theory with straight problem-type questions". It is pleasing to see that not everyone is thoroughly bemused by the multiple-choice format, which is, in fact, only one of a number of "easy marking quick answering" types. It is hoped that the P. and T. Department does NOT incorporate into its Novice and AOCIP Syllabuses a rigid prescription that permits only the multiple-choice type to be used. That would mean a DEAD HAND approach to Amateur Radio examining for the next 50 years! It is hoped that the wording of any revised Regulations on "Examinations" will be flexible enough to permit the Departmental Examiners to offer a more flexible approach to testing of candidates. However, after over 50 years of testing AOCIP candidates WITHOUT A GUIDELINE IN THE FORM OF AN AOCIP SYLLABUS one cannot be too optimistic. So far it seems that P. and T. knows only two question formats—multiple-choice and essay types. While in no way decrying their technical competence in Radio and Electronics, one wonders what specific training and qualifications they possess in the equally important areas of education, instruction and examining.

Yours faithfully,

Rex Black VK2YA.

F3/59 Milton Avenue,  
Henley Beach, SA 5022.

The Editor,  
Dear Sir,

I am writing this letter to inform you of the views I have formulated since joining the amateur ranks some eight months ago.

1. Nobody condescends to use AM any longer, which for a "shoestring" like myself is particularly infuriating. I don't have either the test equipment or money to assemble a flashy full-blown SSB rig. I have heard that if I attempted to use DSB I would get the same solution.

2. I came into the amateur scene naively believing that most amateur's major items of equipment were home-built, and that older amateurs would have been the most active builders. That belief was quickly broken by the overwhelming weight of evidence to the contrary. In particular I remember talking to a grey-haired old gentleman at a WIA meeting some months ago. When asked whether he knew of any amateurs who used AM he said he didn't know of any in SA, but there was an AM net in Victoria on 80m. He then expounded the virtues of his latest purchase—an FT901! Given that sort of "encouragement", it is little wonder that I am a rabid anti-commercialist.

The Editor,  
Dear Sir,

Dr. Dayal Abeyasekera's letter, published in February 1979 AR, has proven most useful and informative in further work on the system described in my article "Optical Communication for the Amateur" (AR January 1979).

However, I feel that Dr. Abeyasekera has not recognised several important practical considerations applying to the amateur constructor, which we considered carefully prior to publication.

Specifically, I would take issue with Dr. Abeyasekera's statement that the solid state systems used for optical communication possess "better signal-to-noise ratio than the vacuum tube systems described". That statement may prove to be very difficult to substantiate.

It will be noted from Figure 13 of my article that the mercury lamp modulator is a simple, relatively high current class A amplifier. That it is a vacuum tube amplifier is irrelevant. Any suitably rated power transistor could have been used in an appropriate circuit to perform the same duty. This amplifier used valves, since all of the parts could be salvaged from an old TV set, with the exception of the output valves, which are readily available from disposal sources. Many amateurs would have these components on hand.

A number of solid-state optical communication systems were tried by the author and fellow experimenters between 1968 and 1976, using such varied equipment as LEDs, electro-luminescent panels, photo-conductive detectors, photo-transistors and photo-diodes. All of these were abandoned when we achieved vastly improved signal-to-noise performance over practical distances with the mercury arc/photo-multiplier combination. It is significant that the only other published experiments over similar test distances to ours in Australia (Burlinson, Aust. EEB, December 1972) employed a similar system.

The insuperable problem lay in finding an LED of reasonable price to a mercury arc, giving a similarly intense light output. 100 watt mercury lamps are readily obtainable from any electrical wholesaler for about \$8. I could not say the same for the availability or the price of high output LEDs.

As Dr. Abeyasekera has found with LED-based systems, and I quote from his letter, "The test link . . . at its best so far had a 40 dB S/N ratio for 10 kHz bandwidth over the length of a 50 foot corridor".

Pioneer experimenters Bell and Tainter, using nothing more than vibrating mirrors and selenium cells with reflected sunlight, spanned 700 feet in free air and full daylight. That was in 1881. Refer "The Photophone" by W. Ackroyd (1883).

With the mercury arc system I described, John Eggington VK3ZGJ and the author maintained a 2-mile optical link between December 1975 and May 1976. It was a 2-way link, with 30 to 40 dB S/N in one direction and 20 to 30 dB S/N in the other direction, owing to smaller aperture optics in the return link. These noise figures were maintained on the vast majority of nights, which were relatively clear. During heavy rain, this would fall to about 5 to 10 dB S/N, and the only time that the system broke down completely was in very heavy fog just before dawn, when a very cold misty day. A usable signal could be transmitted whenever the transmitting site was visible at the receiving site. The S/N figures I quote were with the full 10 to 15 kHz bandwidth of which the system was capable.

Though this level of reliability may, as Dr. Abeyasekera has pointed out, make it unsuitable for commercial use, amateurs do not necessarily need a service giving a very high percentage of usage time. Such is the case with ionospheric propagation on HF. Commercial services are steadily moving up to satellite communication, yet the amateurs are still perfectly happy to use HF bands, even if they open up for only a small percentage of the day.

As I see it, the quandary can be put thus: How on earth can anybody claim to be an amateur when their major items of equipment are designed and built by professional companies. When their equipment has a major fault it is repaired by professional repairmen and when their QSOs are more of a social than technical nature. The answer is, of course, they can't and it's about time the ARS and in particular the WIA started openly declaring this! Failure to do this honestly will only lower our esteem in everybody's eyes.

7. The only ways that would ensure the continuance of the ARS under these conditions is to declare—

(a) That we are a viable on-going commercial concern that stimulates economic growth, generates employment in the order of tens of thousands and generates cash flow in the order of millions of dollars world-wide. Also, due to the competition between major producers of amateur and other communications equipment, the ARS, together with similar services, generates technological advancement of communications at a pace that would have been otherwise impossible.

(b) With an investment of between \$500 to \$2000 by most amateurs in their own commercial equipment, they're not fool enough to submissively accede to any demands that some amateur bands be given over to commercial interests. After all, we're just as much a commercial concern as these other interests, and as with other voracious groups in society, we have just as much right to have our collective demands listened to and acted upon favourably. If nothing else, amateurs are a group of people on this earth that have a right, along with other groups, to a fair share of this earth's resources and that includes the electro-magnetic spectrum.

(c) The amateur radio service is a group of people where you can either be the instigator of, or participant in, the subject being discussed. No other mass communications medium has this ability of complete flexibility and immediate feedback of information. In any QSO, a statement can be made, questions asked, answers given on any subject that ranges from local neighbourhood events to the feelings of average people on recent happenings in their distant countries. From short hop "gather-rounds" to world shrinking DX technical discussions, amateur radio fills the bill in the most cost effective and enjoyable manner we presently have available for the financially funds limited person.

8. Finally, and I'm sure you've read similar proposals, if only half of the above is true then some way must be found to allow all responsible people to a fair share of the electro-magnetic spectrum. The best way to do this is to allow these people to become part of the ARS by the passing of a simple operating techniques exam. This exam would test their ability to correctly operate a commercial amateur rig, or several rigs, representative of the range of operating techniques required. Also it would test their ability to correctly set up and tune a number of commercial antennas. Finally it would also test their knowledge of regulations as pertaining to the ARS.

Yours,

G. L. Moore VK5AGL,  
F3/59 Milton Grove,  
Henley Beach, SA 5022.

P.S.: I have included \$2.50 for WARC 79, you're going to need it!!

## EDITOR'S NOTE

Our readers would have to agree that this is an unusually long letter for AR to publish, but I have allowed its publication without any alteration, as we have always believed in the freedom of speech and this column is a forum to air your views. Perhaps our correspondent has a message in his letter from which we all might learn from. I trust that some of his frustrations have now worn off.

Publication of these long letters is not to be taken as a precedent.

Acknowledgement: Many thanks for the \$2.50 donation to the WARC fund — we do need it — and much more!! (VK3JUV.)

3. The use of net frequencies and channel numbers. If you are using crystal controlled operation as I am, you need two crystals — one for the net frequency and one for another frequency to conduct your QSO. If you use just the one crystal for the net frequency, your QOs are just a cry in the wilderness.

In short, net frequencies have discouraged people from looking across the bands to hear what is available, and it is "tough" if the crystal you obtained from the disposals store isn't near the net frequency.

My opinion of channel numbers is that they are great provided you have got a shop-bought rig that displays them! I mean, why bother with actual transmitted frequency, it is such a technical old thing anyway! If you happen to have a chart depicting how this channel system works, fine, if not, you become as hopelessly lost as I am when trying to figure out what frequency Channel 6 2m FM repeater represent.

4. Use of high power linear (or otherwise) RF amplifiers. Like the Kenwood TL-922 2KW PEP and the Dention ML2A500, 1 kW CW input on CW. As the institute knows these power levels are illegal for the ARS and yet these amplifiers are used, sold and advertised as if they are a normal item in many amateur shops. If the ARS is to have any integrity in view of the public, of commercial operators and of the P. and T. Department, this practice must stop.

5. The advertisement of "illegal" equipment. Both of the amplifiers mentioned in (4) are advertised in the WIA Journal AR (i.e. Vol. 46, No. 10, October 1978). The institute cannot cry ignorance of this type of equipment being advertised in AR, for in the same issue there was a front page announcement apologising for a mix up in prices between the Dention ML2A500 and some other item in an Emona Electronics advertisement.

Now I could stretch my credulity to believe that the busy staff of a monthly magazine simply don't have time to check every advertisement for the offering of illegal equipment — but not after that lot! For that statement to have been made, someone would have had to look up that advertisement to confirm that the prices were in fact wrong. Also that person would have had to realise the intrinsic value of the 1 kW amplifier in order to end the technology started with "I must have thought that Father Christmas really did buy me that one" these adverts have appeared in the three issues of AR I have at hand. To suppose that the staff of AR have not perused these issues after publication and, further, that they have not noticed the advertisement, especially in Emona Electronics' case, of illegal equipment is ludicrous!

The WIA is the representative body of Australian amateurs, who are a group of people interested in observing the Wireless Telegraphy Act as pertaining to the ARS. As such the WIA has the responsibility of behaving like an "ideal" amateur with regard to regulations. Further, it has the responsibility to ensure that such regulations are observed, or at least encouraged, by amateurs through the medium of AR and other avenues.

If the WIA neglects this responsibility by allowing repeated advertisements of unlicensed equipment, it can't expect any respect from either the Australian amateur, the P. and T. Department and, most importantly, WARC 79. If it's just a matter of commercial pressure, then increase the price of AR by \$0.50 or \$1.00 and tell these firms that persist in displaying unlicensed equipment what to do with their adverts. I am sure any reasonable amateur would support this move.

6. The sham of today's ARS. The intrusion of commercialism into amateur radio activities is so deeply entrenched and widespread, that "amateur" and "commercial" equipment is almost synonymous. Also there are now firms that cater on a regular basis to the repair of most types of commercial amateur equipment. Further, to claim that the technical level obtained in the passing of the AOCX exam is such that the widespread repair of this highly sophisticated equipment is possible by amateurs without professional servicemen is just plain piffle and utter hypocrisy.

HELP YOURSELVES —  
GIVE TO THE WIA WARC FUND

The working model of the system is still operable. I would invite and would welcome the opportunity of making a series of further S/N tests on the equipment, plotting this against parameters such as humidity, temperature and wind. All that I need is the assistance of an interested party with access to a car.

Dr. Abeysekere states that, "Assuming that a S/N ratio of 20 dB is acceptable . . . and that input S/N seldom exceeds 50 dB, it is evident that 30 to 40 dB of signal degradation with respect to noise is all that can be tolerated". That seems quite reasonable. However, Dr. Abeysekere continues, "A light drizzle or moderate fog is all that is needed to introduce over 100 dB of attenuation over distances as short as 100 metres". From my own experimental work, I would assume that this is an extreme figure. However, to continue, "It is only when there are very clear atmospheric conditions . . . that less than 30 to 40 dB signal degradation with respect to noise can be achieved". Here, I must disagree. Firstly, signal attenuation is not the same as received signal-to-noise ratio. In radio communication, signals may be transmitted with 50 dB S/N and can be attenuated by many hundreds of dB before reaching the receiving antenna. Provided the signal-to-noise ratio of the receiver is low, and the transmitted signal is significantly more powerful than external noise, received signal-to-noise ratio could still be up near 50 dB. Secondly, Dr. Abeysekere's analysis takes no account of the transmitters' power with respect to ambient noise, which is probably the most important single consideration in any communication system's ability to convey intelligence.

Admittedly, the LED systems are an elegant solution to the problem. They have extremely fast response times, while the mercury arc is limited by its ionisation time to an upper modulated frequency limit of about 20 kHz for full modulation. But this is no disadvantage for a single-channel voice system.

And LEDs do have very low power consumption. But even Dr. Abeysekere admits that ". . . the total light output and beam energy flux density (i.e. the LED systems) are less than that of those from common . . . hand-held torch lights". With such low power, it is little wonder that Dr. Abeysekere has noticed that the signal drops below ambient light levels very quickly as transmission distances increase. The "brute force" method of using an arc lamp presents, for our purposes, a rougher, less efficient but infinitely more practical solution.

As to costs, a series of priorities must be established. Despite their high cost, we decided to employ photo-multipliers as the detection device in our proposed system. They have an intrinsic freedom from thermal noise at room temperature with respect to semi-conductor light detectors, owing to their low infra-red sensitivity, photo-emissive nature, and high post-detection gain. An analysis of this is described at length in the book "Laser Receivers" by Monte Ross, listed at the end of my January article. In any case, we obtained these PM tubes very cheaply on a number of occasions from disposal sources. Should these prove hard to obtain, SSTV clubs or commercial television sets are sources which could provide PM tubes which have been used in telecine chains and have fallen below broadcast specifications. This tactic proved to be rewarding on a number of occasions.

The SLR lenses used by Dr. Abeysekere are not ideal for optical communication work, being unnecessarily high in optical quality, and insufficiently large in aperture. The 5-in. f/5.6 convex lenses sold by Coles & Garrard for \$5 would have been a better choice, I feel. For a reflector behind the arc, we used a 12 in. traffic light reflector, sold quite cheaply by Eagle Signals.

There are a number of other reasons which I could give for the excellent results obtained with the mercury arc system which I won't elaborate on here, owing to space.

To conclude, Dr. Abeysekere states that ". . . telecommunications authorities are not likely to prevent amateurs and others from conducting research into optical communication". There has already been a conviction against a business organisation in Melbourne which continued to use

an IR link between two city buildings after repeated requests by the P. and T. Department to cease operations.

In view of this conviction, intending experimenters should approach the licensing authorities for the requisite permit before making their results public.

Yours faithfully,

Syd Clark, VK3ASC

## MAGAZINE INDEX

Syd Clark, VK3ASC

### BREAK-IN October 1978

The Amateur's Code; Digital Control Interface; A Pre-selector and Adjustable S Meter for HF Transceivers; TVI; Basic Antenna Facts; The Good Companion CW Monitor; Solid State Version of the LM and BC221 Frequency Meters; Trans-Tasman Commemorative Flight, 1928-1978; Whither Communications.

### BREAK-IN November 1978

The "Galbraith" Power Supply; A Battery Charger for Penlite Ni-Cad Batteries; Galbraith RF1 VHF Pre-amplifier; Taming the Regenerative Detector; Mobile in the Late 70s; The Royal Air Force Amateur Radio Society; 50th Anniversary of the Tasman Crossing.

### CQ November 1978

Amateur Radio Serves the News Media—A Safari with the President; Constructing Simple High Current Power Supplies; A Multitester for RF; The Radio Amateur's Nasty Weather Primer; CW WAX DX Contest All-Time Records, Phone, CW and USA; The Heathkit Model IM-4190 Bi-Directional RF Wattmeter Kit; A Two Metre Transmitter for AM; The SW-5—A Pioneer Amateur Receiver; A Cheap and Easy Memory Keyer; Wide All-Band Antennas; Solid State Vacuum Tube Equivalents; Temperature Control of Electronic Circuitry; Amateur Radio Station Grounding, Pt. 3.

### HAM RADIO August 1978

10-GHz Transceiver; Frequency-Lock Loop; Locating TVI Caused by Metallic Rectification; Seven Element Four Metre Quad; High Resolution Frequency Synthesizer; Automatic Noise-Figure Measurements; Electronic RTTY Keyboard; Improved Grounding for the 1296 MHz Microstrip Filter; Simple Monitor for Accurate Reports on Two-Metre FM; Single Code Decoders; Electronic Bias Switching for the Henry 2K4 and 3K4.

### HAM RADIO October 1978

High-Frequency Communications Receivers; Low-Noise 432 MHz Pre-amplifier; Tracking Calculations for Superhet Receivers; CW Signal Processor; Low-Noise 30 MHz Pre-amp; 1296 Local Oscillator Sidebands; Synthesized High-Frequency Local Oscillator System; Reciprocal Detector; RTTY Demodulator; High-Sensitivity Pre-amp for Frequency Counters; Twin Diode Microwave Mixer; Two-Metre Pre-amplifier.

### QST September 1978

Meet the Remarkable but Little Known Vackor VPO; Designing a Vertical Antenna Preselector; Updates the DVM/Frequency Counter; An Auditory Dip Oscillator; A Solid-State Transverter for 70 cm; An Inexpensive Capacitance Meter; Direction Finding—European Style; JG1DFW, First Solo Explorer to Reach the North Pole; Operation Outreach; Ask Not What Amateur Radio Can Do for You; QRP Honour Roll; Results, First Annual ARRL EME Competition; Dawn of an Era; WARC 79; Moved and Seconded; Amateurs Lose on Reconsideration of 10 Metre Amplifier Ban; We Are Not Alone.

### QST October 1978

A Newly Discovered Mode of VHF Propagation; The Canadian Wonder; A 25 kHz Calibrator for the HW-8; Build This High Performance Top-Band Converter; SSTV Pictures from Your Microcomputer;

Medium Scan Television—A New Frontier; Build This Sardine Sender; You and Your Log; How Safe Is Your Ham Shack?; A Different Kind of Course; Sweepstakes for the Little Guy; Try a Handful; Code Contest; They Made It—W50PQ/Double Eagle II; QST Abbreviations; Straight Key Night; 45th ARRL November Sweepstakes Announcement; Results, 1978 ARRL International DX Competition; Double-Digit Damage; Hams Fire by Nine with WARC Comments; ASCII at Last; Now There's Something You Can Do.

### QST December 1978

A 20 Metre VFO Controlled 6 Watt Transmitter; A Baseband Communication System, pt. 2; Some Experiments with High Frequency Ladder Crystal Filters; What Next After Moonbounce? Venus Bounce; An Inexpensive Multi-band VHF Antenna; The Club Filter; Give Your Repeater Some Identity; The Aerial Performers of the Radio Circuits; The Contesters; The Easy Way to OSCAR 8 Mode J, Pt. 1; Three Feet of Rain; Simulated Emergency Test Announcement; Rules 32nd VHF Sweepstakes; Hertz not Parts . . . A Sine of the Times; Results First ARRL UHF Contest; 1978 September VHF QSO Party WARC 79; Region 2 Amateurs Review WARC Progress; Amateurs Have Their Say on the Communications Act of 1978; FCC Prohibits Autopatch on Automatically Controlled Repeaters; Africa, Asia and Amateur Radio.

## WIA EDUCATION

Graeme Scott VK3ZR  
Federal Education Co-ordinator

Here is a bibliography of texts, etc., which are suitable for use by amateurs and intending amateurs.

### RSGB PUBLICATIONS

Technical books:  
Amateur Radio Techniques.  
Guide to Amateur Radio.  
Morse Code for the Radio Amateur.  
RSGB Amateur Radio Call Book.  
Radio Amateurs' Examination Manual.  
Radio Amateurs' Examination Revision Notes.  
Radio Amateur's Examination Handbook.  
Radio Data Reference Book.  
SSB Equipment.  
Service Valve and Semiconductor Equivalents.  
TVI Manual.  
VHF/UHF Manual (2nd ed.).  
World at their Fingertips (Paperback (De-Luxe)).

### Maps and charts:

Amateur Radio Prefixes (World) Map.  
Countries List.  
Great Circle DX Map.  
QRA Locator Map (Western Europe) (in tube).  
QRA Locator Map (Western Europe) (on card).  
VHF/UHF band plans (on card).

### USA PUBLICATIONS

Radio Publications Incorporated:  
Beam Antenna Handbook.  
Better Short Wave Reception.  
Cubical Quad Antennas.  
Simple, Low-Cost Wire Antennas.  
VHF Handbook.

### American Radio Relay League:

Antenna Book.  
Course in Radio Fundamentals.  
Hints and Kinks.  
Mobile Manual.  
Radio Amateur's Handbook (Paperback).  
Radio Amateur's Handbook (Hardback).  
Radio Amateur's Operating Manual.  
Simple Subband for the Radio Amateur.  
Understanding Amateur Radio.  
VHF Manual.

### CQ (Cowan Publishing Corporation):

Amateur Radio DX Handbook.  
Antenna Handbook, Vol. 1.  
Antenna Roundup.  
Mobile Handbook.  
RTTY A-Z.  
RTTY Handbook.  
Shop and Shack Shortcuts.



#### OMEGA RECEIVER FROM JAPAN RADIO COMPANY LTD.

The high performance Omega receiver from JRC is the result of extensive development and experience gained from their already respected range of VLF receivers.

Measuring only 29 cm across, the instrument is noteworthy for its compact chart recorder and its ability to automatically track up to eight phase coherent Omega stations.

Constant monitoring of measuring conditions of the Omega stations is accomplished by use of LSI CMOS technology. Should any stations signal to noise ratio become unacceptable the operator is warned of a possible tracking anomaly by an audible tone and station identification lamp flicker. For added convenience, automatic lamp centering is maintained. Segment synchronization is also automatic, although manual operation can be performed at the touch of a button.

Improved reliability and performance and reduced power consumption, size and price put the instrument into the grasp of everyone.



#### Improved specifications read:

Model JLA102: Frequency, 10.2 MHz; sensitivity, 0.01  $\mu$ V; dynamic range, 90 dB; resolution, 1 Hz; frequency reference, 4 MHz of  $2 \times 10^{-5}$  stability offering an operating temperature range of  $-10^{\circ}$  to  $+50^{\circ}$ C; power requirements, 110V AC/240V AC/24V DC.

Power fail protection available as an option. Whip antennas and other accessories also available.

For other information contact Vicom International Pty. Limited, Professional Products Division: 68 Eastern Road, South Melbourne 3205, Victoria. Phone (03) 699 6700.

#### NEW PROGRAMMABLE 16 CHANNEL VHF/UHF SCANNING RECEIVER

GFS Electronic Imports at Mitcham, Victoria, have just announced the release of a new Crystal-less Programmable VHF/UHF scanning monitor receiver. The receiver, manufactured in Japan by JTL, for whom GFS are Australian agents, is known as the SX-100.

Using microprocessor control only 16 of approximately 32,000 channels between 30-54 MHz, 140-180 MHz and 410-514 MHz can be programmed into the SX-100's memory by just punching up the required frequencies on its control keyboard. Unlike similar units the SX-100 covers the 6 metre, 2 metre and 70 cm amateur bands as well as the UHF CB band.

Frequency readout, channel number, time and date display are all provided by a large green digital readout. Both scanning speed and scanning delay can be varied from front panel controls. Sensitivity is very high at 0.5  $\mu$ V.

The SX-100, which works from 220-240V AC or 12-16V DC power, is ideally suited (its size is



21H x 7W x23D cms) to installation in the car or for base operation from the home or office. It represents quite an advantage to the Hams, UHF, Cbers and those just interested in listening.

The SX-100 sells for \$299 plus sales tax (or \$392 incl. sales tax). For more information contact GFS Electronic Imports, 15 McKeon Road, Mitcham 3132, or phone (03) 873 3939.

#### NEW 3 1/2 DIGIT LAB DMM

Parameters announce the new B & K-Precision Model 2830 3 1/2 Digit Lab DMM which is well suited for all types of lab or bench operation. The bright 0.43 in. high LED display is visible under virtually all types of lighting conditions.

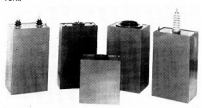
Current ranges are to 10 amps and voltage ranges extend to 1000 V DC and 750V AC. Seven ohms ranges provide measurement capability from 0.01 ohm to 20 megohms.

All ranges and functions of the 2830 are well protected against the accidental application of  $\pm 1000$ V DC,  $\pm 450$ V DC or 300V AC RMS.

For further information contact Bruce McCarthy, Parameters Pty. Ltd., 68 Alexander Street, Crows Nest, NSW 2065. Phone: 439 3288.

#### ENERGY STORAGE CAPACITORS

A new Series of "Energy Storage Capacitors", manufactured by Capacitor Specialist, Inc., is now available from Singer Products Company, Inc., New York.



These capacitors use a dielectric system of film, paper, and non-inflammable, non-PCB oil. This new ES Series offers 127 models in bushing styles.

Voltage ratings from 3 kV to 125 kV are available with current ratings to 250 kA. The widest temperature range ever of  $-35^{\circ}$ C to  $+70^{\circ}$ C and the lowest losses yet (.0012 maximum), allow operation at up to 100 PPS. Energy storage up to 8750 joules in a can 11 x 14 x 25 inches is available in small quantities at prices of 10-13 cents per joule, depending on the volume.

For additional information, contact Mr. Gil Williams, Electronics Division, Singer Products Company, Inc., One World Trade Center, New York, NY 10048.

#### AUTOMATIC CIRCUIT TESTER

The Model 703 Circuit Tester, manufactured by Slaughter Company, Inc., is now offered by Singer Products Company, Inc., New York, NY.

The Model 703 is a compact, high speed microprocessor that can be used for testing cable and harness assemblies, back planes and similar devices. It can be self-programmed and can also be operated by an unskilled person.



The microprocessor provides up to four pre-established permanent programmes of up to 250 conductors each. Digital readout is provided to indicate not only the nature of the fault detected, but also its location.

For additional information contact Mr. Gil Williams, Singer Products Company, Inc., 1 World Trade Center, Suite 2365, New York, NY 10048.

#### OTHER PUBLICATIONS

**Books and Maps:**  
Basic Electricity.  
Basic Theory and Application of Transistors.  
Counties Map.  
Dictionary of Electronics.  
Foundations of Wireless.  
Guide to Broadcasting Stations.  
How to Listen to the World.  
Mullard Data Book.  
Radio Amateur Operator's Handbook.  
Radio Valve and Transistor Data.  
Simple Shortwave Receivers.  
Transistor Audio and Radio Circuits (Mullard).  
World Radio-TV Handbook.

#### MORSE INSTRUCTION AIDS

3GHSCH Rhythm Method of Morse Tuition —  
Complete Course (two 3-speed LP records and one EP record plus books).  
Beginner's Course (one 3-speed LP record and one EP record plus books).  
Beginner's LP (0-15 w.p.m.) plus book.  
Advanced LP (9-42 w.p.m.) plus book.  
Three-speed simulated PQ test, 7 in. DS EP record.

#### USA LESSON OUTLINE FOR AMATEUR ADVANCED/EXTRA CLASS STUDY

#### FIRST NIGHT

The advantages to owning an amateur advanced or extra class ticket as expressed in the FCC regulations. Topics include definitions of types of station (e.g., military recreation and auxiliary link), HAAT, frequencies and emissions allowed to advanced and extra class operators, special call signs, remotely controlled stations, and others.

#### AC THEORY

Circuit theory emphasizing phase. Topics include crystal and mechanical filters, time constant, phase angle, power factor, transformers, filter sections, and the bridge rectifier.

#### SOLID STATE DEVICES

The theory of operation and uses for various devices including transistor characteristics. Topics include transistor amplifier circuits, zener diodes, field effect transistors, SCRs, transistor biasing, voltage regulation, current control, and special types of solid state devices.

#### VACUUM TUBES

Operation at VHF and above is stressed. Topics include lead inductance and transit time, triodes and grounded grid amplifiers, single cavity klystrons, vidicons, and lighthouse tubes.

#### AMPLIFIERS AND OSCILLATORS

Special purpose amplifiers for various applications and transistor oscillators. Topics include RF power amplifiers, cathode/emitter follower circuits, push-pull and parallel amplifiers, phase inverters, frequency multipliers, klystron amplifiers, the Colpitts harmonic oscillator and others.

#### ADVANCED MODULATION CONCEPTS

Advancing capabilities and problems of AM and FM emissions with methods of modulation and sidebands. Topics include modulation capability, over-modulation, splatter, deviation, modulation systems, carrier wave distortion, FM sidebands, and others.

#### EXOTIC MODES OF COMMUNICATIONS

SSTV, RTTY, FAX, satellite, moonbounce. Topics include classification of emissions, modulation mode versus frequency, circuit and system diagrams, operating principles and practices, and others. This should be a topic of major emphasis.

#### ANTENNAS AND FEEDLINES

Types of antennas and their characteristics and the factors affecting power handling capabilities of feedlines. Topics include end fed Hertz, and fed Zep, folded flat top dual band and other antenna types, directive antenna construction, characteristics, and nomenclature, and discontinuities, resonant lengths and electrical lengths of transmission lines.

#### ADVANCED PROPAGATION

Topics include aurora, absorption, sporadic E, attenuation by the atmosphere, meteor bursts, and other phenomena that effect signal propagation.

#### TESTING AND ELECTRO-MAGNETIC INTERFERENCE

Measuring field strength and RF power and current, theory of the cathode ray tube oscilloscope, radio frequency interference including TVI, and automotive interference are topics covered in this part.

THE PERFECT MOBILE RIG...

## ATLAS 210X/215X — 5 BAND — 200 WATT All Solid State HF SSB/CW Transceiver

STILL THE MOST POWERFUL MOBILE RIG ON THE MARKET.  
PRICE WITH NOISE BLANKER INSTALLED: \$852 INCLUDING TAX.

### GENERAL SPECIFICATIONS

FREQUENCY COVERAGE WITH INTERNAL VFO: 1800-2000 kHz (Model 215X only), 3500-4000 kHz, 7000-7500 kHz, 14,000-14,500 kHz, 21,000-21,500 kHz, 28,400-29,400 (Model 210X only). Note that 10m band may be easily owner adjusted to cover any 1000 kHz segment.

FREQUENCY CONTROL: Highly stable VFO common to both receive and transmit modes. Less than 1 kHz drift during the first 30 minutes. Less than 300 Hz per hour after 30 min.

ALL SOLID STATE DESIGN: 4 ICs, 18 transistors, 32 diodes.

MODES OF OPERATION: SSB (USB, LSB), CW.

MODULAR CONSTRUCTION: With plug in PC boards.  
PLUG IN DESIGN: Antenna, mike, extension speaker and power supply connections, etc., are automatically made when set is plugged into special mobile mount or AC power supply console.

POWER REQUIREMENTS: 12-14V DC, 16 amps peak on transmit, 300-600 mA in receive.

DIMENSIONS: 24.1 cm wide, 8.9 cm high, 24.1 cm deep.

WEIGHT: 3.1 kg (6 lb, 14 oz.).

### ACCESSORIES

DMK — Plug in mobile mount for mobile and maritime mobile use	\$63
DDB-C — Self-contained digital readout	\$236
10XB — Self-contained external crystal oscillator for fixed channel operation both inside and outside normal VFO band edges	\$85
MTI — Mobile antenna matching transformer. Changes base impedance of antenna to 50 ohms	\$45
DCC — DC battery cable with plug. Not required if DMK is purchased	\$15
220CS — 115/220V AC console power supply	\$210

OTHER ACCESSORIES AVAILABLE

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The Unique Wire Range Wire Tuner will provide a perfect match to nearly any single wire fed antenna system in the frequency range 1.7 MHz to 30 MHz. It provides the broadest tuning range of any antenna coupling device on the amateur market. At 6% in. wide, 5% in. high and 12½ in. deep, it is compact in size and capable of handling in excess of 1500 watts of output power through its continuously variable LC combination. There are no gaps between tapped settings as found on most transmatch devices enabling any frequency within the specified range to be matched. It is therefore suitable for other than amateur services in the MF and HF spectrum.

It is ideal for portable and maritime mobile operation where space and/or lack of time precludes the use of various resonant antennas. Herb Johnson, President of Atlas Radio, uses one on his own yacht and recommends their use with Atlas equipment. Construction is of first quality materials throughout.

Write or phone for further information and full technical specifications.

PRICE: \$295 — SALES TAX AND DUTY PAID.  
GUARANTEED FOR ONE YEAR.

### ALSO AVAILABLE:

Shure 404C PTT hand held mike ..... \$35  
Shure desk mike.

NOTE: The Atlas 350XL will be in stock again as soon as it is back in production. It is temporarily out of production while Atlas concentrate on a new small model, thus increasing their range to three models.

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Some price reductions on KENWOOD products. Ample stocks of Hy-gain antennas at below prices replacement costs. A new W2-AU type watertight U.S.A. 1-KW balun. A new model KYOKUTO 15-W, 2-M, FM transceiver FM-2016A, 800 channel with 4-channel memory and scanner expected soon, estimated cost \$360.

## HY-GAIN ANTENNAS:

12-AVQ 10-15-20M vertical	\$50
18-AVT/WB 10-80M vertical	\$125
TH6-DXX 10-15-20M 6-el yagi	\$300
TH3-MK3 10-15-20M 3-el yagi	\$260
TH3-JR 10-15-20M 3-el yagi	\$175
204-BA 20M 4-el tiger array	\$230
2M 5-el yagi w/balun 6'3" boom	\$25
2M 8-el yagi w/balun 12'5" boom	\$30
2M 14-el yagi w/balun 15'6" boom	\$40
BN-86 balun for beam buyers	\$20

## ANTENNAS SUITABLE FOR 10M:

11M 5-el yagi 17' boom	\$70
11M CLR-2 5/8W w/3-radials	\$40
HY-Q (USA) 50-ohm balun	\$15

## ROTATORS AND CABLES:

All rotators for 28V AC operation-	
KEN KR-400 medium duty	\$125
CDR BT-1A light duty w/push	
button programmable	\$90
CDR ham III heavy duty	\$175
CDR tail twister extra H/duty	\$225
Bottom bracket CDR rotators	\$10
KS-065 stay/thrust bearing	
1 1/4" to 2 1/2" masts	\$25
RG-58U co-ax cable, per yd.	30c
RG-8U foam co-ax cable, per yd.	80c
8-cond. rotator cable, per yd.	60c
7/8" H.D. VHF/UHF co-ax, per yd.	\$3
CABLE-cutting and packing	\$1.50

## ACCESSORIES

Voltage regulator 18V AC input	
12V DC 3A output	\$23
240/18V AC transformer	\$10
5M RG-58U w/PL-259 one end	\$2.50
Bumper mounts 3/8" 24-thread	\$5
Gutter mounts 3/8" 24-thread	\$3

## CO-AX CONNECTORS

PL-259-SO-239-cable joiners, ea.	75c
Right angles & T connectors, ea.	\$1.50
GLP right angles RG-58U to SO-239	
w/lock nut & weatherproof cap.	\$2.50

## KENWOOD PRODUCTS

TS-520S 10-160M transceiver	\$675
TS-820S digital transceiver	\$1100
TS-700SP 2M all mode trans.	\$850
TS-120V 10-80M mobile trans.	\$550
TR-7600 10W 2M FM trans.	\$400
TR-7625 25W 2M FM trans.	P.O.A.
TL-922 10-160M linear amp.	\$1100
DK-520 adaptor (TS-520)	\$15
LF-30A low pass filter	\$25
TV-502 2M transverter	\$300
AT-200 antenna matchbox	\$175
DS-1A DC/DC converter	\$75
VFO-820 for TS-820S	\$185
VFO-520S for TS-520S	\$160
SP-520 for TS-520S	\$30
YG-3395C CW filter (TS-520S)	\$50
MC-50 desk microphone	\$50
MC-10 hand held microphone	\$20
HC-2 ham clock	\$35
BS-5 and BS-8 pan adaptors ea.	\$65

## YAESU-MUSEN PRODUCTS

FT-7 10-80M mobile trans.	\$450
FT-301S 10-160M mobile trans.	\$600
FRG-7 .5-30Mhz receiver	\$319

## NOVICE SPECIALS — TRANSCEIVERS

10M Sideband SE-502 USB/AM 15W PEP-240V	
AC 12V DC-inbuilt SWR/RF meter 28.3-28.6 mhz-	
clarifier tuning transmit and receive	\$150
10M Universe 224-M USB/AM 15W PEP 12V	
DC 24-ch. 28.480 to 28.595 mhz, 5-khz	
steps-clarifier tuning transmit and receive	\$125
CONVERSION CRYSTALS for amateur licence holders	
— set of 8-crystals to convert 23-ch. 27-mhz CB units	
to 28-mhz. Suitable for Kraco, Sideband, Universe, Hy-	
range V etc., converts as per Universe 10M above —	
CRYSTALS and instructions	\$40

Double female connectors	80c
In-line mic sockets 3 & 4-pin ea.	75c
Mic sockets 3 and 4-pin, ea.	75c
MLS right angle-RG58U to PL-259	90c

All prices are NET, EX SPRINGWOOD NSW, cash with order. Prices are subject to change without prior notice. All risk insurance is free: freight by air, road, rail or post at cost. All orders cleared on a 24-hour basis after receipt of order with payment.

Arie Bles (VK-2AVA) Proprietor

Roy Lopez (VK-2BRL) Manager

# Sideband Electronics Sales



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#### KENWOOD PRODUCTS:

TS-120-V all solid state transceiver 30 W.P.E.P.  
TS-520-S 160-10M. Transceiver  
TS-820-S 160-10 M. Transceiver  
R-820-S 160-M. Transceiver  
R-820 Communications receiver  
TS-700-SP. All mode 2M. Transceiver.  
TS-600-A All mode transceiver  
TS-7000-A 2.M FM. 25W. Transceiver  
TR-7500 2.M. FM. 10.W transceiver  
TR-7600 2.M. FM digital transceiver 800 CH.  
TR-8300 70. CM. FM. Transceiver  
VB-2200-A. Power booster for TR-2200  
VFO-30-G Remote VFO for TR-7200 TX-12. MHZ-RX. 45. MHZ.

#### OPTIONAL ACCESSORIES

VFO-120  
PS-20  
MB-100  
YK-88C  
SP-120

#### KENWOOD PRODUCTS

TR-7200-G 2.M. FM 10.W Transceiver  
TR-7010 2.M. SSB 10.W. PEP Transceiver  
TV-502 2.M. Transverter  
TV-506 6.M. Transverter  
TL922 2 KW. PEP. Lineal amplifier  
SP-8 Regulated Power supply 8.Amps  
VFO. 520-S External VFO for 520-S  
VFO. 820 - External VFO for 820-S  
VFO. 700-S External VFO for TS-700-SP  
SM-220 Station monitor  
BS-8 and BS-5 PAN adaptor  
SP-820 Deluxe Speaker consul  
SP-520 Speaker consul  
SP-70 Speaker consul for TS-700 & 600  
VOX-3 Vox unit for TS-700 & TS-600  
DS-1-A DC converter for 520-S & 820-S  
DG-5 External digital display TS-520-S  
AT-200 Antenna coupler  
MC-30-S Microphone 500 OHM  
MC-35-S Microphone 50. K. OHM  
MC-10 Microphone 50. K. OHM.  
MC-50 Deluxe desk Microphone dual imp  
HC-2 Deluxe Ham clock  
YG-68 CW. filter for TS-820  
YC-3395 CW filter for TS-520  
LA-30-A Lowpass filter  
HS-5 Headphone  
HS-4 Headphone  
RD-15 Dummy load 450 MHZ. 15. Watts  
RD-300 Dummy load 150 MHZ. 300 Watts.

#### HY-GAIN ANTENNAS

12-AVQ 10-15-20M vertical 13 1/2" tall.....	\$50
18-AVT/WB 10-80M vertical 23" tall.....	\$125
TH6-DXX 10-15-20M senior 6 el. yagi 24' boom.....	\$300
TH3-MK3 10-15-20M senior 3 el. yagi 14' boom.....	\$240
TH3-JR 10-15-20M junior 3 el. yagi 12' boom.....	\$175
204-BA 20M 4 el. Tiger Array 26' boom.....	\$230
HY-QUAD 10-15-20M full size cubical quad.....	\$260
2M 5 el. Yagi w/balun 6'3" boom.....	\$25
2M 8 el. Yagi w/balun 12'5" boom.....	\$30
2M 14 el. Yagi w/balun 15'6" boom.....	\$40
BN-86 Balun 50 ohm 1:1.....	\$20
BU-5 Balun 50 ohm 1:1.....	\$14

#### ANTENNAS SUITABLE FOR 10M

11M 5 el. Yagi 17' boom.....	\$70
11M 1/2 wave G.P. w/3 radials.....	\$20
CLR 5/8 wave vert. w/4 radials 22'9 1/2" 11M.....	\$50
CLR-2 5/8 wave vert. w/3 radials 19'10" 11M.....	\$40

#### ROTATORS AND CABLE

KEN KR-400 rotator medium duty 28V-AC.....	\$125
CDE HAM L11 rotator heavy duty.....	\$175
RG-8U Polyfoam Coax.....	80c per yard
RG-58U Coax.....	30c per yard
8 core rotator cable.....	65c per yard

#### SKY-BAND MOBILE HELICAL ANTENNAS

SKY 80 six feet long 3.5 MHz.....	\$28
SKY 40 six feet long 7.060.....	\$26
SKY 20 six feet long 14.150.....	\$26
SKY 15 six feet long 21.100.....	\$25
SKY 10 six feet long 28.500.....	\$24

#### CRYSTAL FILTER, 9 MHz. similar to

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#### COAX CABLE CONNECTORS

PL-259	
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#### Accessories

SWR 50A 3.5 - 150Mhz SWR meter.....	\$26
12VDC regulated supply.....	\$26
5M RG 58-U w/PL-259 one end.....	\$7
Bumper mount c/w/with 3/8" 24-thread ant. mount.....	\$3
Gutter mount c/w/with 3/8" 24-thread ant. mount.....	\$4.50

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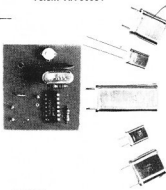
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UB5VBY	176	UL7PQ	40
RB5IOV	176	UL7PAT	check
UB5HDX	32	UL7BGL	2
UB5ABK	check	UL5ABSW	120
UK5WAG*	470	UM5NNN	2
UO5GR	1024	UA900	4929
UO5DN	485	UV9PP	3580
UO5OWS	84	UAGFA	3510
UO5AP	check	RAGOCG	950
UO5OAK	132	UA00DK	888
UAGLBQ	1674	UA9YAT	432
UA6LXZ	check	RA9CIU	378
UK5AA*	4704	UA9OS	check
UK5LEZ*	4160	UK5UAD*	6727
UK5BLK*	1088	UA0NH	2771
UD5DER	3068	UV0EX	1332
UG5JJ	8	UA0CCW	1170
UL7PBY	1615	UA0BAC	693
UL7JAA	819	UA0PJ	429
UL7GBR	312	UA0LEO	check
UL7YR	264	UK0AAC*	7755
UL7BIC	70	UK0CBL*	1908

\* Indicates Club Station.

#### SWL RESULTS

Europe:	
BRS 32525	8750
BRS 25429	2300
BRS 39782	1936
DL 237 12257	216
HE5LN	9610
HE5EV	1540

HA5 063	432
NL 5720	?
OKI 21872	136
OKI 11804	48
ONL 383	2500
SP 0006/SK	1569
Asia:	
JA1 22569	14432
JA1 22728	7200
JA1 18277	4710
JA1 22551	2244
JA1 24070	352
JA1 25111	5820
JA2 8568	5440
JA3 9344	29222
JA6 8331	11456
JA6 9304	3550
JA6 9330	18885
JA7 6824	3950
JA8 3769	3614
JA8 3855	

USSR	
UA1 169	756
UA1 143	297
UA2 125	200
UA2 125	480
UC2 0067	32
UP2 038	837
UP2 038	806
UA3 147	120
UA3 123	213
UA3 121	1691

UA3 121	1518	520
UA4 09543		13148
UA4 091148		220
UB5 060	333	4077
UB5 073	1801	1548
UB5 071	345	342
UO5 03927		2318
UA6 108	1387	1100
UD6 001	220	260
UL7 018	99	330
UL7 179	200	410
UA9 084	200	20222
UA9 147	197	3130
UA9 158	026	442
UA6 108	33/UA0	6080
UA0 107	272	2540

#### NOTE:

Many comments — some strongly made — about non-receipt of 1977 results and certificates. The 1977 contest was organised by WIA in Australia and not by NZART. Any queries about the 1977 contest must be made to WIA. Regrettably, some logs were incorrectly addressed. Publicly each year gives correct address for logs. NZART organises the contest on "seven years" — 1978, 1980, 1982, etc., while WIA does so on alternate years — 1977, 1979, 1981, etc. This year NZART is posting results and certificates in March 1979 (for the 1978 contest). We hope you receive these in good time and will support the contest again.

Good DX and 73.

Jack White ZL2GX.

152 Lytton Road, Gisborne, New Zealand. ■

## SMIRK (SIX METRE INTERNATIONAL RADIO KLUB)

SMIRK is the Six Metre International Radio Klub which promotes six metre operation. There are now over 3000 SMIRK members world-wide and the number in Australia is growing, thanks to the excellent six metre propagation being experienced.

SMIRK members. You then send details of these contacts to the Secretary of SMIRK.

The information required consists of the dates, the times, the call signs, and the SMIRK number of the stations worked. This information, together with a one only fee of \$US4, should be sent to the secretary of SMIRK.

To join SMIRK you must make contact with three

The secretary of SMIRK is Ray Clark K5ZMS, 7158 Stonestone Drive, San Antonio, Texas 78227.

Many JA stations are members as are YJ6KM and FK5AB and FK6AX. So if you go through your list of JAs you may well be eligible.

The following listing will help you sort out the eligible contacts.

JA1UT	2422	JG1WVR	2505	JJ1FDV	2852	JJ2GXU	2508	JH3CXU	2324	JR6HNL	2501	JH0DYU	2905
JA1KSO	2959	JG1WVN	2949	JJ1HPR	2747	JJ2LWZ	2580	JR6IDQ	2362	JR6IP	2565	VK3OT	2409
JA1LZK	60	JH1AFO	2920	JJ1HPU	2547	JJ2NQC	2918	JR3HED	2608	JA7BZU	2778	VK2ZHZ	2477
JA1NVG	1104	JH1DLO	2813	JJ1HWX	2899	JJ2PES	2519	JR3PEO	2502	JA7TIT	2585	VK2VC	2901
JA1OYU	1833	JH1EMH	2773	JJ1IGR	2467	JJ2UJZ	2895	JR3TYL	2879	JA7JGU	2921	VK2BJC	2957
JA1HYR	922	JH1CB	2464	JJ1IWS	2575	JH2COZ	2567	JR3WYM	2517	JA7LBI	2543	VK2BNN	2885
JA1SIK	2958	JH1FRV	2589	JJ1JFJ	2998	JH2EEB	2287	JA4DC	2926	JA7MTI	2452	VK2BYX	2744
JA1WXP	2203	JH1UIV	1103	JJ1JRH	2286	JH2FY	2570	JA4ENN	1779	JA7OUD	2963	VK2YHG	2900
JDIADP	2909	JH1USR	1834	JJ1KNC	2886	JH2WIC	2510	JA4JDJ	1615	JA7QVI	2475	VK2ZAY	2966
JDI6LS	2466	JH1WGD	2480	JJ1MAI	2574	JR2MNU	2582	JA4KJO	2569	JA7RKL	2874	VK2ZBD	2991
JG1GVR	2380	JH1WCS	2220	JJ1OPX	2468	JR2PUH	2538	JA4MBY	2568	JA7UFZ	2669	VK2ZGF	2864
JH1HYR	922	JH1CB	2464	JJ1QMM	2876	JR2JEC	2509	JA4RSJ	2497	JH7APQ	2942	VK2ZV	2842
JH1KUR	2967	JH1CHL	2321	JJ1QJZ	2637	JR2BTI	2523	JA4JPO	2912	JH7JTB	2551	VK2ZRF	2974
JH1LRC	2504	JJ1DLZ	2775	JJ1WGO	2961	JR2VLS	2964	JH4KAY	2522	JH7MSB	2748	VK4GS	2202
JH1PKR	1909	JJ1DOP	1802	JJ1WLW	2995	JA3EGE	2474	JA5CAV	2976	JH7PDD	2779	VK4MS	2201
JH1RXX	2546	JJ1DXZ	2765	JK1BER	2662	JA3JXJ	2799	JA5HTP	2641	JH7RTQ	2911	VK4RO	2132
JH1RJK	700	JJ1FUG	2437	JK1COC	2636	JA3PND	2761	JA5JIL	2700	JH7TWW	2941	VK4ZEE	2499
JH1RJK	700	JJ1FUG	2437	JK1CMM	2876	JA3PND	2761	JA5JFB	2552	JH7UBD	2542	VK4ZNG	2566
JH1TGN	2471	JJ1HGB	2677	JK1EXO	2884	JE3CYV	2503	JA5MEC	2039	JH7UKK	2914	VK4ZRF	2485
JH1TIT	2699	JJ1HMX	1835	JK1EYW	2870	JE3EFZ	2531	JA5PEE	2620	JJ7IUP	2924	VK4ZQR	2455
JH1UWH	2539	JJ1JXJ	2545	JK1FDA	2850	JE3FCU	2532	JA5XNA	2745	JR7CLB	2904	VK4ZSN	2533
JH1VQF	2470	JJ1KZS	2940	JK1HLD	2643	JE3FJN	2905	JA5XOZ	2599	JA8JDX	2706	VK5KL	2481
JH1VLX	2596	JJ1NEX	2940	JK1HYR	2887	JE3KAM	2923	JA5ADQ	2581	JA8JEP	2892	VK5LP	2800
JH1VNV	2596	JJ1OUD	2544	JK1KCT	2750	JE3KMY	2902	JA5ABY	2669	JA8MRK	2375	VK5ZJG	2984
JH1WNV	2512	JJ1RAK	2673	JK1LUV	2749	JE3MPP	2550	JA6JLJ	2603	JA8NDJ	2584	VK5ZT	2910
JF1CXK	1104	JJ1TVJ	2512	JK1MIO	2907	JE3TJV	2456	JA6UDU	2494	JA8PDJ	2527	VK6BV	2600
JF1EPK	2860	JJ1UHU	1760	JK1OIV	2920	JE3WBS	2922	JA6FEU	2495	JH80EH	2712	VK6ZD	1722
JF1GGM	2465	JJ1VLO	2469	JK1PZW	2854	JE3WNV	2719	JA6JDI	2851	JH8FHB	2830	VK6ZHE	2894
JF1HVL	2304	JJ1WLV	1788	JK1VMR	2996	JE3XWH	2762	JA6JLJ	2521	JH8JGU	2875	VK7JG	2980
JF1IOC	2204	JJ1VVO	2285	JK1CQJ	2987	JF3AKJ	2987	JA6JLJ	2492	JH8GWW	2484	VK8GB	2314
JF1PHJ	2721	JJ1WLL	2919	JR1MOK	1048	JF3ARQ	2576	JAMMCD	2923	JH8HRL	2840	VK8ZT	2868
JF1TYO	2564	JJ1XPE	2463	JR1PSX	906	JF3BOO	2965	JAMRJK	2587	JA8JGU	2845	DUIEDS	59
JF1UKJ	2729	JJ1XSJ	2683	JR1SQU	149	JF3POO	2961	JAGTEW	2549	JH9CGR	2841	DUIPAR	58
JF1UMK	2397	JJ1BDC	2486	JA2TI	2554	JF3HJA	2718	JH8BFG	2496	JA9CXK	2363	FK8AB	2944
JF1UUD	2478	JJ1BES	2908	JA2BNV	2513	JF3HLP	2848	JH8EYL	2596	JA9DUR	2839	FK8AB	2945
JG1BLN	2853	JJ1BRN	2541	JA2BZY	2158	JF3KQJ	2837	JH8FHT	2538	JA9EYJ	2548	HL8TG	2880
JG1EKL	2553	JJ1CEI	2312	JA2QDN	2048	JF3LBD	2883	JH6VCX	2511	JA9GJV	2840	HL9JN	97
JG1IIE	2524	JJ1DLZ	2540	JA2HMO	2451	JF3OUE	2835	JH6GVK	2889	JA9ROG	2755	P29HV	2544
JG1OPH	2528	JJ1EIX	2940	JA2ODM	2776	JF3PVT	2830	JH6OJF	2661	JA9CRX	601	P29DZU	2534
JG1RIS	2553	JJ1ENA	2865	JA2OZY	2528	JF3PVG	2811	JH6GTJ	2913	JA9JRK	2903	YJ8KM	2446
JG1TGT	2537	JJ1ETO	2744	JE2AC5	2478	JF3TWM	2968	JH6UZR	2597	JAPPE	2866	YJ8ZV	2843
JG1TRW	2746	JJ1EXE	2754	JE2ARR	2436	JG3ADQ	2914	JH6WVY	2985	JANOKV	2872		
JG1VKW	2660	JJ1EXY	2754	JE2B8Y	2804	JG3DDH	2925	JH6AUJ	2896	JNDHT	2871		

# VLF IF

## An expanding world

Eric Jamieson,  
VKSLP



### AMATEUR BAND BEACONS

Freq.	Call Sign	Location
50.023	HH2PR	Haiti
50.025	6YSRC	Jamaica
50.035	ZB2VHF	Gibraltar
50.050	WA1EXX	Maine
50.050	ZSLNL	South Africa
50.050	K6FV	California
50.080	T12NA	Costa Rica
50.087	WA6MHZ	San Diego
50.088	VE1SIX	New Brunswick
50.089	WA6JRA	Los Angeles
50.092	W7KMA	Oregon
50.098	K6JUH	Guam
50.101	FOBR	Tahiti
50.104	KH6EQI	Peel Harbour
50.110	K6JDX	Guam
50.110	JD1YAA	Marcus Island
50.110	KH6KH	Marshall Island
50.500	5B4CY	Cyprus
51.999	YJ8PV	New Caledonia
52.200	VK5VF	Darwin
52.300	VK6RTV	Perth
52.350	VK6RTU	Kalgoorlie
52.400	VK7RNT	Launceston
52.440	VK4RTI	Townsville
52.450	VK2VJ	Sydney
52.500	3D2AA	Fiji
52.500	JA2IGY	Nagoya
52.500	ZL2VHM	Palmerston North
52.510	ZL2MH	Mt. Clime
52.510	VK6RTV	Albany
53.000	VK5VF	Mt. Lofly
53.100	VK5MA	Mawson
144.101	VK2W1	Sydney
144.400	VK4RTI	Mt. Mowbray
144.475	VK1XA	Canberra
144.500	VK6RTV	Albany
144.700	VK3RTG	Vermont
144.800	VK5VF	Mt. Lofly
144.900	VK7RTX	Ulverstone
145.000	VK6RTV	Perth
145.100	ZL1VHF	Auckland
145.150	ZL1VHW	Wakato
145.200	ZL2VHF	Wellington
145.250	ZL2VHF	Palmerston North
145.300	ZL3VHF	Christchurch
145.400	ZL4VHF	Dunedin
432.400	VK4RBB	Brisbane
432.450	VK3RPX	Ballarat
432.475	VK7RTW	Ulverstone

Daphne VK2NXXD has written advising receipt of a message on the 10 metre band from NH2 that it is a beacon in San Francisco on 52.025 MHz. No call sign mentioned.

Ken VK6ZFQ writes from Koolan Island on the north-west coast of WA to say the ES season was quiet this year, worked VK8 once and to Perth three times, no eastern States at all! JAs started again on 2-4-79, but his best effort was to work into Hawaii. On 25-2 heard KH6EQI beacon 59 at 0500Z, then at 0503Z heard KH6JIS calling CQ on 50.200, 59. Ken called on 52.050 and worked AH6AP who was 5 x 6, and received 5 x 3. The beacon stayed until 0700Z at 59 and finally departed at 0750Z. Later on 25-2 heard and finished the day with a new station K6GJIP at 1230Z.

It appears Ken is getting his share of the DX and is awaiting further news from that area. I have no information whether Ken's contact with AH6AP was the first from VK6 to Hawaii or not. Does anyone know?

### CHANNEE 0

Evan VK3ANI has sent a press clipping from the Melbourne "Herald" of 9-2-79 in which the General Manager of Channel 0 said the proposed change

to Channel 10 by that station in about nine months would cause little viewer inconvenience.

Evan reports GLV10 at Traralgon will move to Channel 8 and the translator FMV8 to 10 will change output to Channel 8. The more important point, however, seems to be that whilst Channel 0 seems likely to disappear from city areas, assuming eventually, there seems to be increased usage of Channel 0 in other areas, viz. Cairns and now Wynyard. Whilst this arrangement is going to inconvenience some amateurs, it seems the great numbers in the capital city areas may get some eventual respite from the QRM pattern it does seem a pity therefore, that in the meantime, the amateurs look like being denied access to 50 MHz during the high period of the present sunset cycle. Even the use of the 50 MHz area on a secondary basis for the time being would be better than nothing!

### MELBOURNE REPORT

My old friend Geoff VK3AMK has written with an outline of the DX situation in Melbourne, starting with 5-1-79 when FKAB and FKAX were worked. JAs on 6-1, YJ8ZVZ on 7-1, then JAs on 14-8, 15-1, 4-2, 12-2, 13-2, then to 14-2 0247 to 0428 many JAs in 1, 2, 4 and 6 areas. 1058 to 1402Z probably the best opening so far, signals not so strong but very widespread, with JA1, 2, 3, 4, 5, 6 and 9 all being available simultaneously. Some VKs worked up to 40 stations.

Geoff comments that conditions are very interesting on 6 metres, however, old guidelines which have applied for years seem no longer usable. Band lends to offer more frequently, times at which openings occur quite out of character with previous observations during past 16 years. On many days JAs have appeared on up to three different openings during a 24 hour period. First opening is often the best, diminishing as the day progresses. Many new calls being heard for the first time.

Geoff is not happy with the present usage of 52.050, due to some rather thoughtless characters who persist with local QSOs without ever taking a break to see what goes on around them while like to see 52.000 to 52.100 for outside VK DX working. 52.000 to 52.025 Local QSO calling frequency could be shifted to 52.150, with VK DX using up to 52.200, local working about that.

Thanks for your thoughts, Geoff. In general I cannot find a great deal with which to disagree with you on the band plan suggested. Maybe the situation generally is worse in other areas, but here in VKs there seems on most occasions to be no hassles over 52.050. Stations do work on frequency during periods of no DX, but with the use of VOX and rapid PTT operation there are ample opportunities as a rule for stations to break in. The fact that stations are in QSO on or around the calling frequency can alert an overseas or other DX station who might also be monitoring that spot, so there are things to be said for and against. I guess the main problem which confronts us all at times is that stations in one area may not be able to hear a DX station being received elsewhere, but perhaps due to Es, an interstate VK may be doing the QRMing. This being so they should move if requested. This is all leading up to the fact that I would very much dislike any move made at present to change the 6 metre calling frequency from 52.050, when so much effort has been made to get it well known overseas. From feedback I am getting and contacts made, it has become well known in many places as our calling frequency. For the time being, let's preserve it as that, mainly by sensible usage.

### STATE REPORT ON 10 GHz

The WA VHF Group Newsletter advises that Colin VK6MG and Roger VK6NR at 240 on 14-7-79 created a State first by working a bi-directional contact from Rockingham Beach to the North Pole at Fremantle - an over water path of 25 km on 10.280 GHz. Transmit power was 10 mW into a horn with 17 dB gain. The received signal from a similar horn was mixed by Schottky diodes, with a local oscillator on 10.25 GHz giving a final IF of 30 MHz. FM was used with a deviation of 75 kHz. Signal horizontally polarized and were received at 5 x 1.

### SA USES BUNBURY REPEATER

On 11-2-79 between 2000 and 2030 local, Peter VK5ZQT working from Winters Hill near Port

Lincoln, SA, 217 km west of Adelaide, accessed and used Channel 6 Bunbury (WA) repeater to work VK6ZHV, VK6ZJ, VK6VU, VK6VQ, VK6ZDR, VK6CB, VK6ZIT, VK6WD, VK6KH and VK6XL. Peter was using a 6 element yagi next to his car. It is a very good effort even if through a repeater, as Bunbury is about the same longitude as Perth and that city has never been easy to work on 2 metres using any mode. It could have been interesting to see what happened had Peter been able to use 558.

### 432 MHz REPEATER

From "The Propagator" I report that Paul VK2ZQT now has a repeater in operation on a manned situation between 6 and 10 p.m. daily in the Illawarra area of NSW. Input is 435.225 and output 438.225. For those who can tune into high it could serve as a beacon at times when the band opens.

### USA TO GEELONG

The "GARC" Newsletter reports that on 11-3 the first known opening to USA W6 area took place when signals on the six metre band peaked to S9 and Ws were worked by VK3AGP, VK3ZZX, VK3AKK, some Melbourne stations and Steve VK3AT at Hamilton. They finished the day by working JAs on the band as well.

### SIX METRES

We eventually had to get around to it, didn't we? This report covers the period from mid-February to late March, when much mystery and suspense was there to behold. David VK5KK has helped me to fill in the gaps so that I believe it now should be of interest to readers.

The point has been reached where Japanese six metre openings, whether they be day or night, are very common and DX further afield is more prevalent. It is interesting to see the number of JA8 openings since 16-2. The best day by far was 18-2, when the number of JA8 to VK5 contacts alone exceeded 100. Also other good days were 25-2, 4-3, 7-3, 10-3, 13-3, 17-3, 21-3, 28-3 and 29-3 to JA7 to JA8. All times 0000 to 0500Z. Some night time TEP has been extended to the 35:5 mark and on many days the 35:5 mark was extended to 12th. No doubt by the time of publication the band will have become a king-size nightmare!

### K6 TO THE FORE

Great interest was centred around KG6DX from 1300Z to 1430Z. At a prelude a short alert on the events leading to the opening. ES conditions prevailed from 1000 to VK2 and VK4 with the centre of interest being VK9NI on Norfolk Island. He was worked by VK2s and VK4s and Gerry VK5Z2Z whose patience and mere 10 watts made another country for him at 1030Z. VK9NI holds the key to many new country QSOs since VK9ZNG in 1975 hasn't QSLed for any QSOs including his FIRST EVER contact on VHF to (VK5KK). Later, from 1200Z the Japanese were working VK1, 2, 4, 5, 6 and 8 and on many days the 6 metre signals (J2, J3, J4, J5, J6, J7, J8, J9, J0) were working. At 1300Z KG6DX broke into a quick QSO between two VKs (all signals removed to improve clarity of report) and he went on to work nine VKs with signals ranging from 5 x 8 to 5 x 9. 40 dB! Station worked was WZ2Z, VK5KK, VK5QV, VK5SLP, VK5ZBU, VK5ZPS, VK5AVQ, VK5ZMJ and VK5SV, plus 8x VK2s with signals from 5 x 3 to 5 x 8 and four VK3s with similar signals. After Joe could no longer hear any further DX from interstate VKs QSOed him again for 20 minutes until signals took a dive. It appears Joe had only just walked into his shack and discovered the opening mid-stream! None of the other active KG6/KH2 stations heard. Only two of the 21 stations had worked K6 before, and on both occasions it was also Joe at the other end!

### NIGHT TIME CONDITIONS

It would seem HA4DX on Guadacanal has finally surfaced on 6 metres with a blaze of glory. He has worked KG6, HL9, YJ8, KH6 and many JAs. VK9NI has been given JA another country. Peter YJ8PD (ex VK2YHG) has been lapping up the extra attention on 6 from Pt. Vila with DX every good night. Peter heard on one night KH6EQI for several hours and would you believe AH6AP (Hawaii) was also active. YJ8PV (Hawaii) at the same time, but no QSO resulted! Sort of a Russian stand-off! Peter has worked over 150 JAs up to 24-3 and will probably work a few more before he leaves.

# DARWIN AND TWO METRES

From Darwin, two metres is really moving with the possibilities of DX further afield. If you think the change from tropospheric to ionospheric propagation was dramatic in the case of the 144 MHz record, then just hold your breath. There has now been a second occurrence of TEP-like propagation on 432 MHz, this time between Rhodesia and Greece. SV1AB and SV1RH copied Z6ZUV on 432 MHz from 1816 to 1830Z on 20-3. Distance is about 6226 km! Z6ZUV is very active in EME circles and most probably was running quite a high ERP but still not an unusual occurrence of TEP-like propagation equator. Who knows what next, maybe VK8 to JA8?

# 50 MHz (LISTENING)

HS1SD is active on 50 MHz from Thailand with an IC50SD and has worked HL9TG and JA8 as night. Also H51WR will soon be active with a TS600. So, yet another country! Graham VK8GB has heard KC8IN from Caroline Islands and KP9NT/DJ2 Philippines on 50 MHz, while on 11-3 Graham heard K2SNW on 50.110 at 0110Z calling CQ at 25 w.p.m. CW! Looks like a few DXCCs (quarter centuries) coming off VQ8RK is definitely active from Diego Garcia in the Indian Ocean on 6 metres. Diego Garcia is between Malagasy Republic and India. While beaming down that way it may pay to listen for Z5BLN on 50.050 MHz. Jack now runs a 24 hour beacon with that frequency with about 80 watts and 8 elements. He beams towards UK between 0600 and 1000Z. For that path, the VK8-Z56 MUF will have a reasonable peak during May to 48 MHz so no imagination is needed to see what could happen. Even to here (VK5) the MUF is peaking to 40 MHz at 0730Z each day to Z5. Also HL9HW heard VK8s on 14.411 MHz from 8-31. It's all very involved, isn't it?

# DAYTIME CONDITIONS FOR VK-ZL

The number of ZL to W openings has outstripped VK by miles but they still are interesting. As far as VK is concerned the action started around 2-3. That opening has already been reported and up to 24-3 there have been no reported two-way contacts to VK4 on 52 MHz. On 4-3 K7VK to VK4RO, WA4TNN/VKL heard by VK2BVX around 2300Z same day. On 6-3 band open to KH6 from 0745 to at least 0945 in VK5. The band was open to VK4 via E and KH5 was simply Type 1 TEP. Es extended. KH5EQT averaged 5 x 6 for the period and KH6AIA was 5 x 6 to VK4 and VK5 around 0755Z on 52.050. No contact made to VK3 although since VK3AUG has been worked by KH5NS so the band does open to VK3 from time to time. On 7-3 band HL9TG on 50.002 at 0315Z at 419, testing with his beam on K7VK. The signals lasted for 5 minutes, long enough to get some calls on tape. Several cards have arrived from SV1s in HMT and HM2 on three occasions so it is only a matter of time before HL is worked again in lower VK.

# VK3 TO W

On 10-3 OKwinas to VK5. On 11-3 from 2230 to 2345Z the band opened to VK3 from VK8, VK3AGR worked six. VK5J, VK6NMT, N6CT, N6HZ, AA65 and W6FJ. This is the opening reported earlier in the Geelong notes. VK5KID in Mt. Gambier attempted to QSO but without success. Only signal heard in Adelaide was W6NMT on 50.1 MHz at 2225Z. The extra 300 miles took its toll. It is good to see all contacts were on 52 MHz, and yes, you guessed right, on 52.050 MHz, on 52.050 cent. On 19-3 Signals were to 5 x 9 in VK2 and 5. Time 0112 (VK5LP was working), plus VK1RC and VK4AZZ. To 0350Z. On 52.050 MHz, Yes! Clay runs a Swan 250 into a 1½ wave lambda, 70 feet high! Address: Clay Lane WA4TNN/VKL, Box 444, APO Seattle, 98736, USA. All cards for 13-3 sent to VK5 and

# DAYTIME CONTINUES

Things did not stop there either. On 13-3 WA4TNN/VKL on Shemya Island worked nine VKs, four VK5s, three VK6s and VK5W saw five. Signals were to 5 x 9 in VK2 and 5. Time 0112 (VK5LP was working), plus VK1RC and VK4AZZ. To 0350Z. On 52.050 MHz, Yes! Clay runs a Swan 250 into a 1½ wave lambda, 70 feet high! Address: Clay Lane WA4TNN/VKL, Box 444, APO Seattle, 98736, USA. All cards for 13-3 sent to VK5 and

will have been distributed by April. Return QSLs to above address or via MURO. No VK3 contacts —probably no one about. Some stations had time to work Clay a second time, there being no one else to work. WA5TNN/VKL was heard on 50 MHz again on 18-3 at 2355Z 5 x 6. VK5 and VK2. From 13-3 to 18-3 scattered reports but no contacts. On 17-3 W6XJ worked VK2BA, VK2ZRH, VK2AIH and partially worked VK2KH on 52 MHz. From 2225 to 2345Z signals good enough for SSB. Also on 24-3 VK2BA, etc., hearing W6XJ on 50.050 5 x 9 for two hours. To demonstrate the sharp cut-off of signals, ZL TV on 50.74 at S9+ and no Channel 0 and no VK on 52 MHz but good signals on 50 MHz. Once again, what could happen if VK had 50 MHz! Also G6GDX worked VK2ASZ and VK4ZUB on 52 MHz on 24-3. Northern VK6 working into HL9, etc. W6XJ copied by VK1RC on 17-3.

# OVERSEAS NEWS AND EVENTS

JA8 working W, KL7, LU, PY, CE, etc., as usual. HL9TG worked LUXE8 and LUBAHW for a possible new world record on 5 metres (south-east path). HL9TG and HL9HW have also worked WA4TNN/VKL. HL9HW no longer maintains a 24 hour beacon and the following is the only set schedule. Week-days 2100 to 2230Z and week-ends 2100Z to 1000Z on 52.050 MHz. He beams on W during these times with a TS600 and 5 element beam. He is waiting for an amplifier for K9MYC to give up to 100 watts. HL9TG uses a Heath SB110 with 100 watts and sometimes a TS820 plus converter on receive.

# OUT-OF-BAND SIGNALS . . .

but excluding frustrated VKs. From Korea HLKA on 44.25 and HLQX on 40.305 MHz are both studio to transmitter links for Korean broadcast stations in the rice-paddies around Seoul. Also reported from Korea are HLF on 50.193, HLG on 50.837 and HLX on 52.110. All are marine information stations sending QX on CW. However, they could be harmonics so any information on these would be appreciated. Also various police frequencies from 39 to 45 MHz. We won't tell you all about them, but about the best yet have been from New Orleans, USA, and mobile in Alabama in the 39 to 40 MHz range. Anybody heard any VKs lately? You hear in VK2 and VK4 on these frequencies? Only the police and one or two other services use voice in the 30 to 50 MHz range. Many signals are tone-bleepers or pagers with CW Idet. Turning north one could be excused for thinking that no two stations speak the same language. Quite a lot of Spanish and French also heard from the NE and E area. In the near future it is hoped some details will be published on frequency usage and reception equipment.

Anyone wanting circuit details and other information on the PRG10 should contact Mark VK5AVQ (ex VK5ZVQ) as he has the manual.

Now let's get back to earth, or the troposphere at least.

# 144 MHz AND ABOVE

Two metres and above has been relatively quiet, it seems to be lacking the summer DX crowd. On 4-3 the band was open to VK8 for VK5 5 x 4 and VK6XV 5 x 9. Also at 1440Z VK6XV 5 x 5 on 43.21 MHz. The beacon had been evident for three days prior but dismal activity at both end restricted contacts. On 12-3 VK5CK near Mt. Lofty worked VK5VJ on 144.3, the ATV net, once again proving those who think we only ever make a good VHF band. The VK5CK worked VK3XAV and VK5AS. Rumour has it a VK3 in western zone of Victoria has a 432 MHz transverter and is expected to fill the gap in activity in that area. Most VK3s currently worked from VK5 have been in Melbourne and further away. It would be good to see the proliferation of 432 stations in VK3 as good as it is in the west, where you have to toss a coin to see what band you will rag-chew on! In the meantime VK5CK remains as QRM on 1296 MHz, but the said contact did in fact eclipse the then world record on that band. Such is life, David.

# GOOD OPENING TO KOREA

28-3 turned out to be a rather good day for many people. VK5LP heard JA1TG on 52.050 at S3 at 2355Z and that was the only VK5 contact heard in VK5. KG6ED next was monitored on 50.110 to S9+ at 0303Z, and shifting up to 52.050 at 0037Z, where he was worked in VK5 on CW. At 0055Z HL9TG was observed on the 6 metre net on 28885 kHz and given warning of possible improving conditions. The Vladivostok TV came up to

S9+ soon after, to be joined a bit later by the Magadan TV station, both around 49.750 MHz. You can always tell when both stations are there by the best note they produce. It looked good for KL7. At 0143Z JA8DXB was worked on CW on 52.028. At 0159Z JA7LJA 5 x 5 on SSB. It looked as though the conditions had swung away from a possible KL7 opening. At 0259Z JA7 HL9TG was worked in VK5 by VK5KK, VK5ZJG, VK5LP, VK5ZMO and VK5SV. Mark VK5AVQ heard Gary whilst mobile in Adelaide using his ¼ wave whip, but was unable to make a contact (news came back to us from interstate that a two-way contact had eventually with the mobile, but this is not correct). Mark rushed to his home QTH and worked HL9TG from there. Signals were 5 x 9 most of the time. We also worked VK2 BYX and VK4DO worked him, and VK3OT had a CW contact. David VK5KK also worked HL9WI Bill around 0330, but signals were not as strong as Gary. The irony of the matter is that if (VK5LP) asked Bill to shift up to 10 kHz for a contact, he moved up to 7 kHz and landed right into the lap of VK5KK. As soon as David had finished with Bill the band folded. Such is the luck of the game!

As these notes are being finished, news came to hand that today 29-3, VK6ZKO worked HL9TG, but no other VK8s despite the VK8RTV Perth beacon being S9+. Also VK4PU worked W6NMT and WA6TFS. And VK5ZMO received a 625 line test pattern from a possible Indonesian video signal on 48.25 MHz. ZLs worked into W also, around 2202Z. And so the saga goes on.

I must close now, as I have to catch today's mail. I thought for the moment "Strange how much you've got to know before you know how little you know."

73. The Voice in the Hills. ■

# STOP PRESS

Chris VK5MKQ worked Peter Z6ZUV on 432 MHz via EME at 0930Z on 31-3-79. In reports exchanged signs, 2-3 dB above noise with a peak of 6 dB. Chris using a 20 ft. dish and Peter a 30 ft. dish.

On 3rd April VK5KK and VK3OT are believed to have worked VE1GE.

Also on 3rd April VK3s and VK2s worked KH6NS, HL9WI and JAS.

WBGZ Loren Windom will call VK on 52.050 from 2300Z to 0300Z Saturday, USA, and VK Sunday morning, calling on the hour and half hour. Call for two minutes then listen for two minutes for 10-15 minutes. Loren, in Columbus, Ohio, runs a kilowatt and a large rhombic on Australia.

# WANTED

The Project ASERT Committee of the WIA is anxious to obtain a number of Rustrak miniature recorders, preferably having a range 0-1 mA and a chart speed of 5 cm/hour.

If any member or other person reading this advertisement is prepared to donate or sell a recorder of this type, the ASERT Committee would be most grateful.

Please have a look in your junk box and see what you can find; then either write to Box 150, Toorak, Vic. 3142, or telephone Les Jones (03) 338 9284 A.H.



Mike Bazley VK6HD

6 James Road, Kalamunda W.A. 6076

The following is taken from the West Gulf DX Bulletin. I think it is of interest.

#### THE RUSSIAN WOODPECKER

If you have not heard this one, you have not been on the air in the last year or two. Like a lot of other things, you try to live with it and wish it would go away but it seldom does. Maybe if you knew a bit more it might help to tolerate the continuing burden. The following information compiled by W3 . . .

The "woodpecker" is a long range radar and the range can be estimated by noticing that the repetition corresponds to 25 w.p.m. CW dots. At this speed, the time from dot to dot is 96 milliseconds and this means that the radar range is roughly 47,000,000 feet or 8,900 miles. This "one-dot-air" estimate was done without instruments so it is probably a bit in error. If the actual design range was 15,000 km or 9,320 miles, the error in the estimate would only be 4 per cent.

Presuming a 10 megawatt video and 18 dB antenna gain, the ERP is 88 dBw. However, if you figure 20 metres at 1,000 miles, this immense signal is reduced by path loss to a mere 0.0066 watt.

This might make some think that a 1 watt jammer would have an advantage over the woodpecker of over 1,000:1 but this is not correct. Not all of a jamming signal will be effective unless it is able to pass through the IF and video filters of the radar. A constant carrier is not effective at all because it is rejected as a DC level by the AC coupled video circuitry of the radar.

However, CW dots will get through, this assuming a rise time of 1 millisecond for amateur CW and an additional 20 dB advantage is given back to the radar because it is sending CW dots at 25 w.p.m. bandwidth and corner frequency. Notice that the CW dot jammer, even if only 1 watt, still has a 10 to 1 advantage. It might even be that a 100 watts or 1 kW would be even better.

There is some reason to believe that the above is true. For one thing the woodpecker is only heard on the phone bands where voice envelopes can be rejected by the radar video circuit. Also, when someone is sending CW dots at 25 w.p.m. the woodpecker usually OSVs within five minutes.

Some who have studied the situation have noted that persistent CW sending on the woodpecker frequency has had them go QRT, one instance it lasting for about three weeks, returning with a new gimmick. The woodpecker showed with a frequency hopping mode. If problems developed, the woodpecker would hop to some other frequency on the amateur band.

However, the woodpecker must have an IF bandwidth of 20 kHz in order to process the 100 micro-second pulses that they transmit and thus there are not many such hops possible within one ham band. Observation tends to reinforce this thinking, only about eight operators sending dots at 25 w.p.m. spaced 20 to 30 kHz across a band would eliminate the advantage gained by the frequency-hopping technique.

(See also the report in April AR—Ed.)

This writer suggests that perhaps you might feel like calling H5HHH on the off chance you may get an H5I on the other hand. It will improve your CW and get rid of some GRM.

A letter from PA0DLM, which arrived too late for the April issue, stated that a special station would be active on all HF bands from 2100Z April 29 to 2100Z April 30. The station would be commemorating the 400th year of the "State of the Netherlands". A special QSL would be available

to all those sending a QSL (via the bureau is acceptable). So if you worked this one then you now know what it was all about!

Another piece of history in that KP4AM/D (Deschech) finally showed on the band during March (QSL via W6WX) and I trust that those who chase DX made it and were in the same position as this writer who was doing antenna chomper and maintenance at the time!

The 3X1X reported previously has been heard again, with the still more potent pile up, beam heading is OK so this could be the genuine article. No QSL information to hand at present.

Rumour has it that OZ1CIRH has obtained a licence to operate from VA. No call sign as yet but it is believed that operation could commence in April or May.

One of my other hobbies is stamp collecting. What has this to do with radio? Well in a recent issue of "Stamp News" there was reference to the country of Redonda, an island adjacent to Antigua, which is in process of issuing its first stamp. It would appear that Redonda is a separate nation with its own King!!! A new DXCC country in the offing???

Apologies to all for not giving advance information of the Spratly and Franz Joseph Land DX-peditions. To be of value information has to be received here 6 weeks before DXpedition date. Other than only those of an impending DXpedition 2 or 3 weeks prior to the operation. If anyone is interested and would like to let me have, say, five stamped addressed envelopes, together with a wanted list, I will try to forward brief details of any DXpeditions that come to hand. Those details that arrive too late for publication of course. (I hope this offer does not get out of hand!)

#### FROM THE WEST GULF DX BULLETIN

HV35J usual operator, Brother Ed, has been transferred to HK land. This leaves the Vatican without a regular amateur operator. ZD9GH shows nearly every Monday on 14250 kHz from 2100Z and on Saturdays from 2000Z. VP8SO South Orkneys on most days 14275 kHz from 2000Z. No more amateur radio is being allowed from the Comoros and D68AD has had his licence cancelled.

#### FROM OUR READERS!

It would appear that there is a demand for an expanded QSL section judging by comments received. This has been greatly expanded this month. If you don't agree then let me know. JACUUV/1 was heard taking a list (JAs only) for 3V8Z, LUSZY (South Sandwich) heard on CW 14023 kHz at 0145Z. S8AAA heard on 14 CW at 1740Z (for those of you that burn the midnight oil). 9J2WR is back in the UK, signing GDA3HV, and still has his QSL logs. If anyone still needs a QSL, Corlie Bungalow, Ronange Road, Ballasalla, IOM, will find him. The information contained in the letters received highlights the differing DX conditions between East and West. Boy those South Americans are like "hen's teeth" over here in the West!

#### QTHS YOU MAY HAVE MISSED

A4XH—Box 8530, Salalah, South Oman.  
AP2UR—via W6FRP.  
FB8XS, FB8XV—via F5VU/C.  
F67W0—Box 287, St. Germain de France.  
F7WTT—via 4247T (SAE and IRCs required).  
F7Y7E—via W5JLU.  
HD1A—via WA4QM0.  
H18MOG—via W3SKN.  
H21MJ—via WA6FLF.  
J2BAG—SP 85039—CT Djibouti.  
J2BA—SP 85039—C. T. Djibouti.  
J2BAY—via F6ETO.  
WD8JTC/KH2—via KGS, Guam Buro.  
KH6JH/KH4—via KM6BI.  
KP4AM/D—via W6WX.  
P29BL—Box 7412, Boroko, PNG.  
P29EJ—Box 1486, Lae, PNG.  
TZT—via W6RGO.  
TA1ZB—via VK4LG.  
TFSTP—via DL7MQ.  
VK2DCA/VK9—via BH8AAA.  
VK0JC—via OZ2AE.  
VP20XD—via W5BLDH.  
W69SK—via W6GJP.  
VO8MR—via NSGQ.  
VR3AH—via WB4FRU.  
YS10—via W2FK.  
ZF2C1—via WA6AHF.  
ZK1BD—via ZL15Z.

ZL3MG—via ZL2HE.  
3B8Z—via W2GKH.  
3O3AF—via —AO0UV/1.  
3DBT—via ZS2SA.  
3SM2ALH/4U—via SM Buro (counts as SJ).  
VE3BW/K4U—via WA3HUP (counts as YK).  
W6BDY—via VE4SK.  
6YSDA—via VE4JK.

#### FROM THE FIJI ASSOCIATION OF RADIO AMATEURS (FARA)

In a letter to the Editor dated 24-3-79, Upali 3D2UP advises us as follows—

The FARA at its meeting held on 30th January 1979, resolved to inform the WIA that—

(a) The Association was re-activated at a meeting held on 27th November, 1978, and the office-bearers for the years 1979 are as follows: President, R. L. (Dick) Northcott 3D2CM; Joint Secretaries, Upali Ransinghe 3D2UP, Bernard Malandain 3D2BM; Treasurer cum QSL Manager, Raj Singh 3D2ER; Committee Members, George Williams, Bob Hodgkinson 3D2BH; and

(b) "Faranet" operates every Monday as follows: 07.30Z to 08.00Z, 14.195 kHz; 08.00Z to 08.30Z, 3695 kHz.

Net will be operated and conducted by one of the licensed members of the Association and any of your members are welcome to join in the net.

We have 22 members of which 16 are licensed.—3D2UP.

Many thanks to those who have taken the trouble to write in, especially VK4KX, VK4SS, VK6LK and 3D04Z. Thanks are also due to the West Gulf DX Bulletin.

#### LETTER

The following is a letter received from John McKendrick LU8EBI:

"I am taking this opportunity, whilst on holiday, to write 'back-logged' QSLs and catch up general correspondence!

I would be very happy to provide all information for those seeking confirmation of LU8 Argentina. Every Monday and Friday VK3RK and I sked on 14300 kHz  $\pm$  QRM at 1000 hours Z; other regular skeds are on Saturdays and Sundays, 21255 kHz  $\pm$  QRM in QSO with VP8PO, QJ, LUSXE, W2HTI, V5SEK et al—we start at 1200 hours Z. All VKs and Pacific Region very welcome.

I would also be very happy to receive requests by mail to establish a time (2 please) and frequency for any enthusiast to confirm Argentina on 80-10. I am with facility for CW and SSB, using Heathkit 401, 301, SB220, also Kenwood 580S and Yaesu 2100B 3 element tribander for 20, 10, 10; ground plane; and long wire to back up from 80 right through. My direct mail address is: Embajada de Australia, Av. Santa Fe 846, Capital Federal, Buenos Aires, Argentina. My Australian address for the forwarding of correspondence (approximately 2-3 weeks) is: J. McKendrick, C/o 25 Turnbull Avenue, Toorak, Vic. 3142.

Hopefully within the next few months I will receive confirmation of PORT OA4 (Lima, Peru) and CE3 (Sant. Chile). More news of that later!

All OSOs are confirmed by QSL cards—my US Manager is K8EVQ—any takers for VK7?—It's quite a job!

73s, Yours faithfully,  
John McKendrick LU8EBI, ASSWIA, ARRL"

#### QSL MANAGER

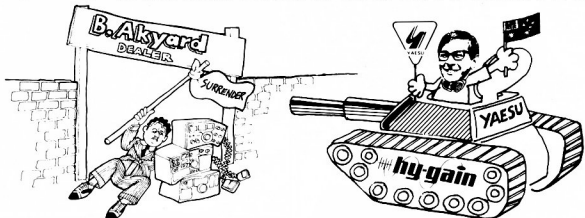
Tony De Prato WA4POH of 205 Cherokee Trail, Somerset, Kentucky 42501, USA, advises that he is the QSL Manager for the following stations: UP8PU, UP6QG, UP8QJ, UP8NJ, Z31DM and KG4DS.

## TRIAL AOCPEXAM

TRIAL AOCPEXAM — IN JULY,  
MULTIPLE CHOICE TYPE, CLUBS  
OR DIVISIONS. CONTACT ROY  
HARTKOPF VK3AOH, FOR DETAILS.

# THE WAR CONTINUES

**THE BATTLE STILL RAGES WITH YAESU — NOW HY-GAIN ANTENNAS HAVE FALLEN TOO!**



You must have heard about the Yaesu price war — Dick Smith will better any genuine price offered by anyone on Yaesu products . . . We've received such a tremendous response from the Amateurs of Australia that we've decided to reduce the price of Hy-gain HF antennas. So now you can buy your complete amateur station from Dick at a real bargain price.

## YOU REAP THE BENEFIT!

**And you'll be buying from a fully Australian owned company — your one stop electronics shop who actively supports amateur radio!**

### HERE ARE OUR YAESU PRICES:

(and we'll send them anywhere in Australia for just \$6.00 extra — We even lose money on this 'below cost' freight offer!)

FT-101E 80-10m HF transceiver	Cat D-2860	<b>\$789.00</b>	FT-101Z New HF transceiver	Cat D-2862	<b>\$775.00</b>
FT-301 Solid State HF transceiver	Cat D-2870	<b>\$795.00</b>	FT-901D Top class HF transceiver	Cat D-2854	<b>\$1349.00</b>
FT-7 Mobile HF transceiver	Cat D-2866	<b>\$375.00</b>	FT-227RA 2m FM scanning transceiver	Cat D-2891	<b>\$379.00</b>
FT-227 2m FM transceiver with memory	Cat D-2890	<b>\$379.00</b>	CPU-2500 computerised 2m transceiver	Cat D-2889	<b>\$549.00</b>
FC-301 Antenna tuning unit	Cat D-2896	<b>\$219.00</b>	FC-901 antenna tuning unit	Cat. D-2855	<b>\$249.00</b>
FL-2100B 1.2kW linear amplifier	Cat D-2546	<b>\$529.00</b>	FL-110 200W linear amplifier	Cat D-2884	<b>\$189.00</b>
FRG-7 Solid State HF Rcvr	Cat D-2850	<b>\$319.00</b>	FRG-7000 Digital HF rcvr	Cat D-2848	<b>\$599.00</b>
FP-301 13.8V/20A supply	Cat D-2872	<b>\$169.00</b>	YC-500S 500MHz Freq. Counter	Cat D-2892	<b>\$475.00</b>

We believe that the prices above are better than any supplier in Australia. If you find someone cheaper for the same goods, tell us! For us to better any price, simply show us the advertisement from any Australian company. After checking that they have stocks available at that price we will sell it for a lower price. Offer remains open while present stocks last (approx. \$250,000 worth).

Easy terms available to approved personal applicants on any item priced at \$111.00 or more.

### NEW HY-GAIN HF ANTENNA PRICES:

#### SUPER SPECIAL:

TH6 DXH SLASHED BY \$104.00 TO ONLY

**\$295.00**

Cat D-4308

TH3MK3 BEAM:  
Save \$50.00 . . .

**\$249.00**

Cat D-4306

TH3JR BEAM:  
\$20.50 off!

**\$199.00**

Cat D-4304

18AVT VERTICAL  
**SAVE \$14.50**

**\$135.00**

Cat D-4302

**HY-GAIN VHF ANTENNAS ALSO IN STOCK. ASK OUR PRICE!**

## NATIONAL RIX-1011



**A Unique New SSB/CW Transceiver For Amateur Communications**  
There is no substitute for quality, performance or the satisfaction of owning the very best. Hence, the incomparable National RIX-1011 amateur transceiver. The RIX-1011 covers all amateur bands 1.8-30 MHz (100-10 metres). It utilizes advanced Phase-Lock-Loop circuitry with dual gate MOS FETs at all critical RF amplifier and mixer stages. There's a rotating frequency counter with digital readout and a memory display that remembers frequencies at the flip of a switch. And that's just the beginning. Matching speaker unit RIX-51011 and complete external VFO RIX-V1011 also available. For further information and specifications write, phone or call in!

**\$1990**

## CONVERT MORSE, RTTY AND ASCLL TO VIDEO



**MODEL 200 TRI-MODE CONVERTER**

Based on the powerful F-8 Microprocessor system, this new product from Info-Tech advanced technology is an addition to the popular Model 100.

**\$668**



**\$407**  
**New Model 150 RTTY KEYBOARD**

Features: 4 speeds (60, 66, 75, 100 wpm), built-in T.U. with 3 shifts (170, 425, 850 Hz), automatic CR & LF at end of 64 or 72 character line. Built-in low speed CW or provision.



## INFO-TECH MODEL 30 MORSE TO VIDEO CONVERTER

**\$429**  
Converts received Morse code from your receiver to a video printout on your TV, no other devices required.

**Features:**  
• No critical adjustments • Attaches to any CW receiver with BFO and 3 to 600 ohm audio • Simple LED tuning indicator • Unique PLL front end input filter for superior selectivity • Automatic speed and weight adjustments: tracks 8 to 150 wpm • Simple connection your TV set's video amp for excellent clarity • Prints 8 lines, for a total of 256 characters • Text shifts upwards as message continues with automatic carriage return and line feed (Scrolling) • Will accept parallel ASCII with strobe for micro computer applications • Built-in AC power supply.

**INFO-TECH MODEL 10-D  
CW KEYBOARD \$399**

## MULTI PALM II 2M/FM POCKET TRANSCIVER

**SPECIFICATIONS**  
Transceiver frequency range 2 MHz in 144-148 MHz, transceive channels 6, channels antenna impedance 50 ohms unbalanced, BNC connector power requirement 12V DC (negative grounded), Power consumption transmit 300 mA, receive 100 mA stand-by 25 mA, size 68 mm (2-43/64 in.) wide, 254 mm (10-1/16 in.) high, 41.5 mm (1-1/2 in.) deep, weight 470g (1.03 lbs.). Repeater offset +600 kHz modulation variable reactance phase modulation, max deviation +5 kHz microphone condenser, microphone receiver, superheterodyne (1st IF, 16.5 MHz, 2nd IF, 455 kHz), Sensitivity -4 dBm (20dB), Audio output maximum 0.3 watts, Attachment rubber duck antenna, Nickel battery pack, DC cable with cigarette lighter plug. Carrying strap.

**\$229**

## INFO-TECH M-300 TRI-MODE KEYBOARD



A microprocessor controlled keyboard that generates Morse, RTTY and ASCII. Write or call for further specifications.

**\$564**

## New Model 75 RTTY TO VIDEO CONVERTER

Features: 4 speeds (60, 66, 75, 100 wpm), built-in T.U. with 3 shifts (170, 425, 850 Hz), 32 character x 36 line video output with scrolling, connects directly to receiver audio and video monitor.



## RTTY FOR ALL Systems



**Model 402  
ELECTROCOM "SERIES 400"  
FREQUENCY SHIFT CONVERTERS**  
Professionally engineered for outstanding performance, stability, and reliability, the Electrocom Model 400 and 402 add new dimensions of compatibility between radio and teleprinter systems. Manufactured to highest quality standards — in Electrocom tradition for nearly two decades — these units are ideal for military, government, commercial, civil defence and amateur applications. The Model 400 front panel digital knob accurately selects shifts up to 1000 Hz, while the two such knobs on the Model 402 independently set the mark and space frequencies. Both models may also be preset with any tone pair between 1000 and 3200 Hz. For optimum performance with FSK or AFSK systems is assured by matched filters, precision linear detectors, base rate selector, bias compensation, and semi-diversity circuitry. Operation is enhanced by a CRT monitor autostart with solid-state motor switching, antispin, handhold, EIA/MIL output voltages, and a constant current loop supply. In addition, various options are available including rack mounting and polar current output.  
Write or call us for complete product details and specifications.

## alda 103



**3 1/4" H x 9" W x 1 1/2" D**  
**totally solid state  
SSB Transceiver**  
**80 through 20 metres**  
**250 WATTS**  
**FOR ONLY \$495**



**AMATEUR TELEVISION IS EASY  
WITH THE NEW  
ROBOT SCAN  
CONVERTER  
MODEL 400**

• All solid state random access memory • Slow-to-fast and fast-to-slow conversion capability • SSTV picture display on any standard CCTV camera, broadcast video or video, tape source • Permanent picture storage • Automatic or manual TV frame snatch • Internal grey scale generator adjustment standard • Capable of real time display of digitally processed fast scan video.

**\$898**

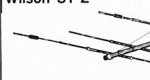
## FDK BIGEAR TRANSCIVER TYPE 1

**2m FM SSB CW PLL SYNTHESIZED MOBILE  
BASE TRANSCIVER**  
• 144-148 MHz, PLL digital synthesizer system, FM: 800 channels (5 kHz step); SSB: 400 channels (10 kHz step), plus VXO system (±2.7 MHz) • AC 117/240V, DC 13.8V, two-step power supply • Digital display system (using a large-sized LED), providing reading up to six figures • Transmitting outputs: SSB/CW, shifting mechanism • From 100W speaker suited for base station • Easy-read, separate S/R/F center meter • ON AIR/ W/GEIVE/RIT position displayed • LED • Includes RIT, AGC, VOX and noise blaster circuit • Provides repeater operation of ± 600 kHz and ± 1 MHz.

**\$694**

## ATLAS 215X-HF Transceiver \$795

## Wilson SY-2



Delivers outstanding performance on 20, 15 and 10 metres. Features Wilson's large diameter High-Q traps, feeds with 52 ohm coax, a beta match method presents tapered impedance which provides most efficient 3 band matching and DC ground to eliminate precipitation static. The result is SWR less than 1.5 to 1 at resonance on all bands and maximum front-to-back. An added feature is the separate 10 metre reflector for correct monoband spacing. Add to this the rugged boom to element mounting, heavy duty tapered tapered elements.

NATIONAL	
RIX-1011 Transceiver	\$1990
RIX-51011 Speaker Unit	\$104
RIX-V1011 VFO Unit	\$104
RF4800/DR48 Receiver	\$466

YAESU	
FT101E Transceiver	\$779
FT-101E Speaker Unit	\$104
FT101D Transceiver	\$950
FP-301 AC Power Supply	\$175
FR-101E VFO	\$215
FR-101E VFO	\$139
FR-7000	\$595

LUNAR	
HF-100L2 Linear Amplifier	\$295
BL-LINEAR VHF Models	\$259
2K-515 MHz Low Noise Pre-amplifier	\$42
OSCARBOX J, UHF Down Converter	\$96
PA-50B VHF In-line Pre-amp, Low Noise	\$54
PA-144B VHF In-line Pre-amp, Low Noise	\$54
PA-28 VHF In-line Pre-amp, Low Noise	\$54

FDK PRODUCTS	
Type-1 2m/SSB CW PLL Mobile/BASE Transceiver	\$694
Type-1 2m/SSB CW PLL Mobile/BASE Transceiver	\$229
Leather case (for Multi-palm 2)	\$11.50
Battery charger (Multi-palm 2)	\$9
Crystals (for Multi-palm 2)	\$3

WAWASSE PRODUCTS	
JB1000/M Counter/Wattmeter	\$235
JB1000/M Clock/Wattmeter/SWR	\$135
JB1000/SFCM Scope/Wattmeter/SWR	\$379
JB1000/SWR Wattmeter/SWR Bridge	\$379
JB1000/M Scope/Wattmeter/SWR Bridge	\$310

B & W PRODUCTS	
Model 333 Dummy Load Wattmeter	\$122
Model 334 Dummy Load Wattmeter	\$221
Model 314 Dummy Load Wattmeter	\$355

KENWOOD PRODUCTS	
ANTENNAS	
4-1/2' 4-el. on 20, 15 & 5-el. on 10m	\$325
5-1/2' 3-el. on 20, 15 & 10m	\$369
8-VT (10m Resonator (10-80m vertical)	\$135

ELECTROCOM	
"Series 400" Shift Converter	\$790

INFO-TECH	
Model 75 RTTY to Video Converter	\$448
Model 150 RTTY Keyboard	\$407
M-200 Morse, RTTY & ASCII to Video Converter	\$568
M-300 Morse, RTTY & ASCII Keyboard	\$564

ROBOT	
Scan Converter	\$898
In-line Video Monitor AVI-090	\$289
ASA 500 Video Camera	\$270

MIZUHO	
SX-90 RF Pre-amplifier	\$86
SX-1 Pre-selector	\$63
DC-5550 Control Generator w/Prescaler	\$120
K-3 Coupler	\$56
K-10 Marker	\$69

OSKERBLOCK	
SWR-300 Power Meter	\$111
SWR-200B Power Meter	\$84
Couplers 6m & 2m	\$50
Couplers 0.7m	\$39

ROTATORS	
Commander FU400 Rotator	\$117
Rotator Power Supply	\$22
Most Clamps	\$11
6-core Rotator Cable	\$1,00m
Cable Cable RG 8/U Low Loss	\$1,30m

**\$269**





## DTR 2000L DENTRON \$1459

Compatible with most exciter, the DTR-2000L was designed within a series of Amateur Bands, as specified by the MIA-2500. These amplifiers have been tested and proven in every imaginable situation. It could put through, from rare Dispositions for medical research labs. Not to mention ham shacks the world over.

The DTR-2000L will cover most MARS frequencies just outside the Amateur Bands. (With proper coil top changes and band switching, from rare Dispositions for medical research labs. Not to mention ham shacks the world over.)

- Modes: USB, LSB, CW, RTTY, SSTV
- Requirements: 220/117V AC 50/60 Hz
- RF Drive Power: 325 Watts maximum and 160 Watts minimum for 1 kW DC input
- Frequency range: 1.8-30 MHz
- DC Plate Voltage: SSB (idle + 2600V approximate), CW (idle + 1800V approximate)
- Duty Cycle: 100% at full power
- Impedance: 50 ohms nominal + Input VSWR: 1.5 to 1 average
- Output Impedance: 50 ohms nominal
- Antenna band VSWR: 3 to 1 maximum
- ALC: Negative gain, adjustable from rear panel
- Spurious Emissions: IMD, greater than 30 dB down; Harmonics, greater than 40 dB down
- FCC Type Accepted
- Size: H. 7 1/4 in. x W. 14 1/2 in. x D. 14 1/2 in.
- Weight (including 9877): 54 pounds
- Packaged in 3/8 in. hardwood crate.

## MT-3000A DENTRON



\$447

- Specifications:
- Power handling capability in excess of 3 kW
- Front panel antenna switch with 5 antenna plus tuner bypass position
- Built-in 50 ohm VSW dummy load
- Dual meters
- Compact: 5 1/2 in. x 14 1/2 in. x 18 in.
- 16 pounds
- Continuous tuning 160-130 MHz
- 3 core heavy duty ballast.

## LUNAR ELECTRONICS

### MODEL HF3-100L

### 2 DUAL POWER

### BI-LINEARIZED

### HF AMPLIFIER

- Full 80-100m broadband coverage
- Full 100 watts output AM (100-200 watts PEP on SSB)
- Dual power, selectable 5/10 watts input power
- Operating modes: AM, FM, CW, SSB, RTTY, SSTV
- Broadband—requires no tuning across band
- Harmonic levels typically—50 dB or better (see specifications)
- RF actuated switching relays
- Full VSWR and reverse voltage protection
- Extra stabilization circuitry ensures spurious-free operation at all input power levels
- Under 1" deep, 1" insertion loss
- Remote control capability
- Receive pre-amp nominal 18 dB gain across band.

\$225

## LUNAR ELECTRONICS

### 28-432 LOW NOISE FIGURE RX

### PREAMPLIFIERS AVAILABLE

"DEDICATED TO MAKING AMATEUR RADIO MORE FUN"

## MIA-2500B DENTRON



\$1199

- 160 through 10 MHz
- 2000 + watts PEP input on SSB
- 1000 watts DC input on CW, RTTY or SSTV
- Continuous Duty
- Variable forced air cooling system
- Self-contained continuous duty power supply
- Two EIMAC 8875 external-anode ceramic/metal triodes operating in grounded grid
- Harmonic Suppression better than 50 dB
- Built-in ALC
- Built-in RF Wattmeter
- 117V or 234V AC, 50-60 Hz
- Third order distortion down at least 30 dB
- Frequency Range: 1.8 MHz (1.8-2.5), 3.5 MHz (3.4-4.5), 7 MHz (6.9-8.0), 14 MHz (11.0-15.0), 21 MHz (18.0-22.0), 28 MHz (28.0-30.0)
- 40 watts drive for 1 kW DC input
- Size: 5 1/4 in. H. x 14 in. W. x 14 in. D.
- Weight: 47 lbs.

## MT-2000A DENTRON



\$270

- Specifications:
- Continuous Tuning 1.8 to 30 MHz
- Styled to match the MIA-2500 and upcoming DENTRON Transceiver, Receivers and Transmitters
- Front Panel grounding switch for your antenna system
- Antenna inputs: Coax unbalanced, 50-239
- Dimple Wire, ceramic feedthroughs
- Balanced line, two ceramic feedthroughs, tuned feeders 75-650 ohms
- Handles a full 3 kW PEP
- Built-in heavy duty 1 to 1
- 3 cores Ceramic rotary switch 18 position, 12 amp capacity
- Capacitor Switch 6000V
- Low profile styling
- Size: 5 1/4 in. x 14 in. x 14 in.
- Weight: 16 lbs.

## LUNAR ELECTRONICS

### BI-LINEAR VHF AMPLIFIERS



- Model, Frequency: 6M3-50P, 50 MHz; 6M10-120P, 50 MHz; 2M10-80P, 144 MHz; 2M25-150P, 144 MHz; 2M30-160P, 144 MHz
- Linearized—accepts all modes
- Low power input yields nom. 9-30 dB gain
- Covers entire amateur band w/o tuning
- Built-in receive pre-amplifier
- Automatic T-R switching
- ICAS ratings apply
- Exceeds FCC R & O 20777 requirements of -60 dB
- Variable T-R delay for SSB/CW use
- Pre-amp and power amp independently controllable
- Pre-amp nom 9 dB gain 250 ohm overall RF
- Functionally designed package including mounting lip
- One year warranty—50 days on power transistors
- Models available for 144-148 MHz bands, 5 MHz segments
- Other models, including 432 MHz band, coming soon.

## ANTENNA ROTATOR



\$117

- Medium-sized Ham Antenna Rotator—F1446
- Constructed for long trouble-free operation
- Extra stabilization circuitry ensures spurious-free operation at all input power levels
- Under 1" deep, 1" insertion loss
- Remote control capability
- Receive pre-amp nominal 18 dB gain across band.

## DENTRON CLIPPERTON-L



\$879

- Clipperton-L delivers 2000 watts PEP input on SSB and 1000 watts DC input on CW, RTTY or SSTV, all continuous duty. All good reasons to take a Clipperton-L along on your next adventure!
- New Feature: H10-L power switching
- 160 through 15 metres 10 metres
- 2000 watts PEP input on SSB
- 1000 watts DC input on CW, RTTY or SSTV
- Forced air cooling
- Self-contained continuous duty power supply 2900V idle SSB—1800V idle CW approx.
- 4-57 B Triodes operating in grounded grid
- 50 ohm input impedance
- Harmonic Suppression: meets or exceeds FCC requirements
- Built-in ALC (adjustable)
- Easy changed 117V or 234V AC 50-60 Hz
- Meter (illuminated) for plate voltage or plate current
- Size: 6 in. H. x 14 1/2 in. W. x 14 1/2 in. D.
- Weight: 42 lbs.

## FDK BIGEAR TRANSCIVER Type2



2m FM PLL SYNTHESIZED MOBILE TRANSCIVER

- 144-148 MHz. PLL digital synthesizer system (800 channels)
- A large-sized LED, digital display system provides readings up to six figures
- Easy-operating separate and selective mechanism displayed by the frequency unit
- Transmitting output: 25W/1W, two-step selector switch
- Provides receiver operation of  $\pm 500$  kHz and desired frequency
- RF output with 5 meter indicator.

## \$375

## MIZUHO RF PREAMPLIFIERS FOR 3-30 MHz BAND



- Model SX-59 FOR USE WITH TRANSCIVERS
- Specifications:
- Frequency range 3-30 MHz in 3 bands: 3-7, 7-14, 14-30 MHz
- Gain 20 dB (at 10 MHz), front panel variable control
- Attenuator, 20 dB attenuation selectable from front panel control
- Input: 50 ohm
- Systems, UHF connectors on rear panel.

## MIZUHO DX-555D COUNTER-GENERATOR

NEW Counter-Generator. Two vital pieces of test equipment in one.



- Counter: 5 digit display, 7 digit readout capability, 10 Hz to 50 MHz
- 20 MHz (Prescaler 200m Vrms to 2 Vrms). Base oscillator beats directly against WWV
- Generator: 440 kHz to 30 MHz in 3 ranges. Output displayed on counter and available at jack on rear panel 600 Hz modulation for AM receivers.

## DENTRON GLA-1000 1 KW AMPLIFIER



- Specifications:
- Size: 3-5/8 in. H., 11 in. W., 11 in. D.
- Weight: 24 lbs.
- Electrical—Power Consumption: 117V AC 50/60 Hz 12.5 amp
- Factory fused at 15 amps, 234V AC 50/60 Hz 7 amps; recommended fuse, 10 amps
- Frequency Coverage: 80 metres (2.45 to 4.3 MHz); 40 metres (6.95 to 7.5 MHz); 30 metres (13.95 to 14.5 MHz); 15 metres, 20.95 to 21.250 MHz; 10 metres, 28 to 30 MHz
- RF Drive: Max. 125W for 1 kW input
- DC Input: 1 kW CW, 1200W PEP SSB
- Input Impedance: 50 ohms 1.5:1 VSWR APX
- Spurious Emissions: less than 30 dB
- Harmonics down better than 40 dB
- Components: 4—60A tubes; 6—Diodes
- FCC type accepted.

\$489

## DENTRON JR. MONITOR



\$104

- Call it what you will—antenna tuner, transmatch, matchbox, or matching network, the JR MONITOR has it all wrapped up in one neat 5 1/4 in. W. x 2 1/4 in. H. x 6 in. D. all-metal cabinet.
- Specifications:
- Continuous tuning 1.8-30 MHz
- Forward reading relative output power meter
- 300 watt power capability
- Built-in compensated balun
- Mobile mounting bracket
- Ceramic Rotary Switch 12-position
- Capacitor spacing 1000 volts
- Antenna inputs: (a) Coax unbalanced 50-239
- (b) Random wire, 100 Balanced feed line 75-650 ohm
- Size: 5 1/4 in. H. x 6 in. D.
- All metal black vinyl finish cabinet
- Weight: 292 lbs.

## FRG-7 GENERAL COVERAGE COMMUNICATIONS RX



\$315

## FRG-7000 GENERAL COVERAGE DIGITAL COMMUNICATIONS RX



\$595

## DR-48 AM-SSB-FM GENERAL COVERAGE RECEIVER



\$476

## CONTESTS

Wally Watkins VK2ZNN/NGU  
Box 1065, Orange 2800

**May:**  
12/13 (2100Z-2100Z) USSR CQ-M CONTEST  
ALL BAND RS(T) + QSO NR  
19/26 MICHIGAN ACHIEVEMENT AWARD AND QSO PARTY  
26/27 (0000Z-2400Z) CQ WPX CW CONTEST  
RULES, JAN. CW MAG.

**June:**  
1/4 (2300Z-0600Z) CERTIFICATE HUNTERS'  
CLUB QSO PARTY  
Details Allen VK2AIR, QTHR, SASE  
PSE.

16/17 ALL ASIAN PHONE CONTEST  
23/24 ARRL FIELD DAY

**July:**  
14-15 IARU RADIOSPORT CHAMPIONSHIPS

**MICHIGAN AWARD & QSO PARTY**  
DX stations work at least one Michigan station.  
Submit log information, including name and address  
of station worked and relate a fact about Michigan  
given by the station worked. Send to Governor  
William Milliken, Lansing, Michigan 48902, no later  
than July 1, QSO part 19-21.

**THE OOPS I REALLY GOOFED IT DEPARTMENT**  
The 1978 Remembrance Day results. Please change:  
VK5 Open — VK5ALC to VK5NLC.  
VK6HK from Phone to Open.  
VK3 Phone — VK3AVQ to VK3AUQ.  
Add to VK2 Phone VK2BMX 329.  
My apologies to all concerned.

John Moyle National Field Day results will be  
published next month along with the latest points  
for the contest champion trophy.

A thought to those running classes for an amateur  
examination. During the doldrums between exam and  
results keep the class together by giving instruction  
in operating a station and how to join in contests  
and how to keep a tidy and well presented log!

**6 METRE SMIRK PARTY CONTEST**  
With the excellent showing put up by 6 metres so  
far the annual SMIRK Party Contest could bring  
some six metre operators out of the woodwork.

Whilst the contest award winners must be a  
SMIRK member, the contest provides non-members  
a chance to contact SMIRK members and may  
provide some with the incentive to become a  
SMIRK member.

The aim of the contest is to promote world-wide  
six metre operation.

The contest takes place on the 2nd June and  
runs from 0000 GMT to 2400 GMT.

Contacts by members with non-members count  
1 point.

Contacts between SMIRK members count 2 points  
each.

The score obtained is the total number of points

multiplied by the number of countries, US states  
and Canadian provinces worked.

The contest exchange information is: Call sign,  
country or US state or Canadian province, SMIRK  
number.

Log sheets and rules as well as SMIRK information  
may be obtained by an SASE to Ray Clark  
K5ZMS, 7158 Stone Fence Drive, San Antonio,  
Texas 78227.

If you have worked three SMIRK members already  
you can obtain a SMIRK number by sending  
\$US4 to Ray Clark at the above address enclosing  
log details and SMIRK numbers of the stations  
worked.

An opening to Japan, the Pacific, or the USA  
would really make this contest an exciting event.

Bob Arnold VK3ZBB						
ORBIT PREDICTIONS — JUNE 1979						
Date	OSCAR 8			RUSSIAN RS.1		
	Orb. No.	Eqx Z	Eqx °W	Orb. No.	Eqx Z	Eqx °W
1	6310	0136	68	2606	0135	224
2	6324	0141	69	2618	0139	227
3	6337	0003	45	2630	0144	230
4	6351	0009	46	2642	0149	233
5	6365	0014	48	2654	0153	235
6	6379	0019	49	2666	0158	238
7	6393	0024	50	2677	0002	210
8	6407	0029	52	2689	0007	213
9	6421	0034	53	2701	0012	216
10	6435	0040	54	2713	0017	219
11	6449	0045	55	2725	0021	221
12	6463	0050	57	2737	0026	224
13	6477	0055	58	2749	0031	227
14	6491	0100	59	2761	0035	230
15	6505	0106	61	2773	0040	232
16	6519	0111	62	2785	0045	235
17	6533	0116	63	2797	0050	238
18	6547	0121	65	2809	0054	240
19	6561	0126	66	2821	0059	243
20	6575	0131	67	2833	0104	246
21	6589	0137	69	2845	0108	249
22	6603	0142	70	2857	0113	251
23	6616	0004	45	2869	0118	254
24	6630	0009	47	2881	0122	257
25	6644	0014	48	2893	0127	260
26	6658	0019	49	2905	0132	263
27	6672	0024	51	2917	0137	265
28	6686	0030	52	2929	0141	268
29	6700	0035	53	2941	0146	270
30	6714	0040	55	2953	0151	273

RS.2 is 40 min. after RS.1

RS.2 is 40 min. after RS.1

## WICEN

Ron Henderson VK1RH

Federal WICEN Co-ordinator,

53 Hannaford St., Page ACT 2614

Ph. (062) 64 2059, A.H.

### "WICEN" EXERCISE AIDS CANOE CLUB

On Saturday, 17th February, 1979, the WICEN  
Group of the Summerland Amateur Radio Club  
assisted the Nymboldia Canoe Trust to conduct its  
world class wild water races at Nymboldia. The  
WICEN (Wireless Institute Civil Emergency Net)  
operated a safety and surveillance radio net over  
the 3 km down river race course. Seven members  
operated a net control station at the powerhouse  
and two sub-stations with a portable link down-  
stream. Two VHF frequencies were used and a HF  
link was established to interstate operators.

The net provided a safety and control function  
for the organisers to monitor the progress of over  
40 competitors and to quickly locate those who had  
misplaced or went missing. For the operators, the  
exercise provided training in net operation and  
message procedure, the accuracy and speed of  
which is essential in emergency situations. WICEN  
operators and their equipment are available for  
emergency service at the request of authorities  
such as police or SES. Summerland WICEN op-  
erators participated in the recent National Disaster  
Organisation's Australia-wide communications exer-  
cise. More WICEN operators are needed and any  
interested licensed amateur operator may contact  
Mr. Leith Martin VK2EA (phone 21 3594) for details.  
The Summerland Amateur Radio Club is again con-  
ducting instructional classes for anyone interested  
in gaining an amateur licence. If interested, please  
contact Mr. Bill Cross VK2BCW (phone 21 6001)  
after hours for details. The Club is currently work-  
ing on new clubrooms at Goonellabah, and hopes  
to have the Club station VK2AGH operational soon.  
The Club also operates a repeater, VK2RIC, from  
near Lismore, which gives VHF coverage from north  
of Brisbane, west to Tentfield, south to Taree,  
and sometimes to Sydney or further, depending on  
weather conditions. (Information supplied by J.  
Alcorn VK2ZNC/NSA, Publicity Officer, Summerland  
Radio Club.)

Join a new  
Member

— NOW —

# ! 250w PEP IN YOUR CAR !

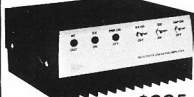
THE IDEAL  
COMBINATION

+



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TS-120V HF TRANSCEIVER



\$225

HF3-100L2 BI-LINEAR  
AMPLIFIER



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City Branch: ROOM 208/661 GEORGE ST., SYDNEY 2000. Ph. 212 4815  
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MAIL ORDERS: Box K21, Haymarket  
NSW, 2000, Australia  
WRITE, PHONE OR CALL IN!

# Awards column

Bill Verrall VK5VV

7 Lillac Ave, Flinders Park, SA

## WAVKCA (VHF) AWARD

During March, I issued award No. 12 to VK2ZHF and I wish to congratulate John on a fine effort in obtaining confirmations for the required 22 QSOs on 52 MHz, including VK0WW from Macquarie island and VK9ZN from Norfolk Island in 1975. Since this award was created, presumably in late 1972 the 12 awards have been issued to the following:—

No. 1	VK3AOR	1-1-73.
No. 2	VK3ZNF	1-1-73.
No. 3	VK3ZOP	26-1-73.
No. 4	VK3AMK	22-2-73.
No. 5	VK3AOT	4-3-73.
No. 6	VK5ZWW	18-4-73.
No. 7	VK3BFG/T	10-7-74.
No. 8	VK3ZAZ	29-7-74.
No. 9	VK2HZ	17-7-76.
No. 10	VK3KK	7-3-77.
No. 11	VK2ZNS	17-12-78.
No. 12	VK2ZHF	3-3-79.

It is significant to note that only 12 awards have been issued in six years and, except for No. 5, all have gone to VK2 and VK3. No VHF operators in the other VK call areas have been successful in obtaining this award.

I have come to the conclusion that other VHF operators are just not interested in this award because the rules are far too restrictive and the required VK0 and VK9 QSOs are now virtually impossible to obtain. We have lost VK9 TPNG, our principal source of VK9 QSOs, now that country is independent, and if there was any more activity from Macquarie Island, this would favour only VK2, VK3 and VK7. It is highly unlikely that there will ever be another VHF operator as keen as VK0WW on Macquarie Island. It is now most difficult to even entice ham operators to come up on HF from Macquarie to satisfy world demand for this country.

Furthermore, there will be no activity from Heard Island in the foreseeable future, so that rules out the possibility of a VK0 VHF QSO even for the VK6s.

There are hundreds of VHF operators within our ranks who are just as keen as those who have been successful in obtaining the WAVKCA (VHF) Award but will never now be able to qualify for this award because of their locations and the lack of opportunity to work VK0 and VK9. In my case I could have qualified for this award back in the early sixties if it had not been necessary to work VK0. However, I have several 6 metre QSLs from JA and ZL!

I am unable to determine the reasons why the WIA should have created an award with such difficult and restrictive rules. As there have been only 12 awards issued in six years, it is not worth retaining the WIA awards programme and in my opinion should be deleted. All ham operators throughout VK and its territories must have an even chance to qualify for all awards issued by the WIA.

There are alternatives. We could change the rules to allow operators from VK0, VK1 and VK4-9 a chance to qualify. One idea is to include a rule that a total of four (say) confirmed QSOs are required from any VK0, VK8 and VK9. Then it would be possible to qualify with four confirmed VK8 QSOs. Another idea would be to introduce a point scoring system so that VK0 and VK9 would count for more points than any other VK call area.

Personally, I am in favour of deleting the WAVKCA (VHF) Award from the WIA awards programme. The standard WAS/VHF award with its provision for endorsement for additional countries confirmed adequately covers all VHF operators in VK. Are there any comments before I close off the records?

## WORKED AUSTRALIAN STATE POLICE

### AWARD

THE DEFENDANT ..... FADY K. TAKEDA ..... ALIAS ..... J3EBAZ .....  
IS HEREBY CHARGED that on the 27th day of Sept. 1978, at ..... RABA ..... in the State of ..... J3EBAZ ..... being a person qualified and holding an Amateur Radio Operators Certificate by having in his possession a prescribed article, to wit, a Radio Transceiver did knowingly operate such transceiver and made contact with members of Australian State Police Departments and informed the said Officers of his Station Call-sign and necessary relevant particulars.

UPON RECEIPT of a written confession from the said ..... J3EBAZ ..... it is judged that the Defendant is found GUILTY and is ordered by the undersigned Charter Members that the defendant be made to display this Award in a conspicuous place, to wit, the premises wherein the said transceiver is Licensed to operate.

Given under our hand and seal this 27th day of Nov. 1978, at ..... CASINO, in the State of New South Wales, with the very best of us.

*[Signature]*  
Lance Ferns  
VK2NF

*[Signature]*  
Gerry D'Arden  
VK2NZ

*[Signature]*  
Robert Ashdown  
VK2JUN

"THIS AWARD SUPPORTS THE CANCER SOCIETY OF AUSTRALIA"

\* 015

## WASP (worked Australian State Police) Award

### WORKED AUSTRALIAN STATE POLICE AWARD

#### OBJECTS

The award is created to further goodwill and public relations between police amateur radio operators of the Australian States and amateur radio operators in all countries of the world.

All profits from the award are forwarded to the Cancer Society of Australia and are channelled into cancer research.

#### TO QUALIFY

The award is known as "Worked Australian State Police Award" and is issued to any amateur radio operator who satisfies the following conditions:—

1. Contact with two different police officers in any of the Australian States by any mode on any amateur frequency. One of these contacts must be with a charter member.

2. The contacts to be a minimum of 24 hours apart unless the police officers are residing in different States of Australia at the time of contact.

#### VERIFICATION

Verification is required for the stations worked in the way of submission of an accurate copy of the applicant's log particulars listing only the two qualifying stations worked.

#### SWLS

Short wave listeners are also invited to apply for the award.

#### APPLICATIONS

Applications should be addressed to WASP, PO Box 404, Casino, NSW 2470, Australia.

The award is attractively printed on gold gloss white card with the background in light blue and letters and edging in dark blue with a buff surround. The awards were printed by Thomson's Printing, 401 Kiewa Street, Albany, NSW, and the result is a very high standard.

A fee of \$4 should accompany applications for this award. This covers the costs of the award, postage and handling charges. Part of this fee is distributed to the Cancer Society of Australia.

Good Hunting.

#### THE SOVEREIGN HILL AWARD

A new award is offered to radio amateurs, on 10 metres. Called the "Sovereign Hill Award", it commemorates the foundation of the Sovereign Hill

Historical Park in Ballarat, Victoria—VK3—the scene of the great gold rush of the 1850s. Sovereign Hill is a fully operational gold mining town; 66 acres of careful restoration.

The award will be available from Saturday, 12th May, 1979, on which date the Sovereign Hill amateur radio station will commence transmission from the grounds of Sovereign Hill.

#### THE AWARD

This is a large—305 mm x 210 mm—full colour, glossy, embossed photograph of a scene in Sovereign Hill, embossed.

#### CONDITIONS

To obtain the award it is necessary to contact five of the award "Charter" stations on 10 metres. One of these contacts must be a local station, which will be designated by the letter "S" following the charter number. All other stations outside Ballarat will have the letter "A" after their charter number. As an example, the award could be won by contacting one "S" station and four other "A" stations anywhere in the world. All amateur stations, on obtaining the award, will be given an "A" number, which may be passed on to other amateurs desiring the award. The requirement of one local "S" station remains. The cost of the award is \$2—two dollars—US, or equivalent, which includes airmailing to the recipient.

#### FREQUENCIES AND TIMES

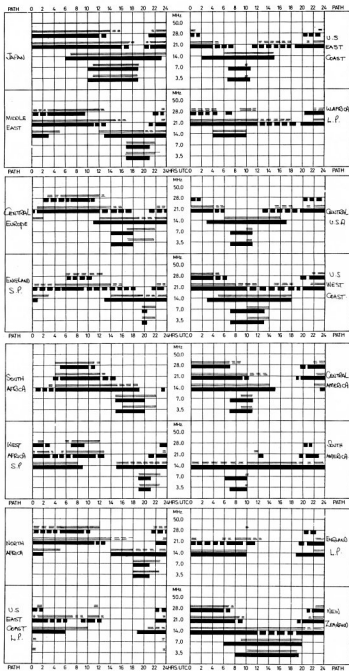
The Sovereign Hill station will transmit on public holidays and selected week-ends, on a frequency of 28.530 MHz, plus or minus QRM. Any contact with this station will count as two "S" contacts towards the award. All subsequent contacts with the "base" station will also count as two contacts, providing they are not made on the same day. All other contacts, both "S" and "A", will count as one. There will also be a transmission on the same frequency each Sunday at 0000 GMT—Saturday USA—in conjunction with the Welcome Stranger Ten-Ten Net; this will count as one contact. Other contacts may be made anywhere in the 10 metre band.

This is a beautiful, high quality award, suitable for framing.

Awards applications and further information, write to: Leo McPherson VK3NIQ, PO Box 247, Ballarat East 3350, Victoria, Australia.

# IONOSPHERIC PREDICTIONS

Len Poynter VK3ZGP/NAC



## LEGEND

FROM WESTERN AUSTRALIA.  
FROM EASTERN AUSTRALIA.

BETTER THAN 50% OF THE MONTH, BUT NOT EVERYDAY.  
LESS THAN 50% OF THE MONTH.

PREDICTIONS COURTESY I.P.S. SYDNEY

ALL TIMES UNIVERSAL UTC (GMT).

*A call to all holders of a*

## NOVICE LICENCE

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## INTERNATIONAL NEWS

Extracts from a paper prepared by IARU Headquarters for the Region 2 Conference in Panama last September might be found interesting.

"Most amateur radio activity takes place in the bands between 1.8 and 148 MHz, with a growing amount also in the 420-450 MHz band now that the OSCAR satellites operate there. The heaviest concentration of stations is in the 3.5, 7, 14, 21, 28 and 144 MHz bands. Therefore, most amateurs tend to regard our allocations needs in and between these bands as being of prime importance. They reason that it is these allocations which will bear the greatest burden of occupancy as the Amateur Service, world-wide, continues to grow past its present number of stations, approximately one million.

However, the amateur activity which takes place on other frequencies is also of great importance to all amateurs, and these allocations must be defended and, in some cases, expanded. Here is why this is important to all amateurs, not just to the experimenters and others who operate there today:

As the technical state of the art improves, the upper limit of frequencies which can be used for every day amateur communication moves ever higher. The 420-450 MHz band is a good example. Just one or two decades ago, the communications range on this band was limited by the rather poor equipment and antennas which were then available. With the advent of low-noise, solid-state receiving devices and more efficient antennas, amateurs found that they could operate here just above as well, and in some cases even better, than they could at 144 MHz. Today in Europe, amateur stations with reliable working ranges of more than 400 km at 432 MHz are commonplace, and the band is supporting much activity which otherwise would have to take place in the overcrowded 144 MHz band.

Amateur satellites hold the promise of intercontinental communication at VHF, UHF, and even higher frequencies, thus easing the burden on the overcrowded HF bands. A particular need is for allocations to the Amateur-Satellite Service between 435 MHz and 24 GHz, where no allocations now exist. Without access to one or more of the amateur bands at 1215, 2300, 3300, 5650, or 10,000 MHz, the potential of amateur satellites will be limited to whatever can be attained in the 435-438 MHz band and in small segments of the 28 and 144 MHz bands.

Amateur experimentation lends prestige to the service, and demonstrates that amateurs are not just hobbyists who engage in idle chatter. Many of the decisions affecting the Amateur Service, both internationally and domestically, are made by administrators who have a strong technical background. They are likely to be more sympathetic to the Amateur Service if they can be shown that radio amateurs share their professional interests, only as an avocation. Perhaps they will even want to become amateurs themselves! In the past, technological breakthroughs which were discovered or popularized by radio amateurs have won us many friends in the scientific, political and military communities. ■

## DIVISIONAL NOTES

VK2

### STOLEN EQUIPMENT REGISTER

The NSW Divisional Office is currently compiling a list of radio equipment stolen or lost. Other State Divisions, amateurs and radio users are invited to write to The Secretary, WIA NSW Division, PO Box 123, St. Leonards, NSW 2065, with the following details on stolen or lost gear:

1. Brand name/manufacturer.
2. Type number of equipment.
3. Serial number of equipment.
4. Type of equipment.
5. Date and time stolen or lost.
6. Police station reported to.
7. Owner's name and call sign.
8. Owner's address.
9. Distinguishing features on the equipment.

With a comprehensive listing, purchasers of "second hand" gear of doubtful origin can ring the NSW office during normal hours (10 a.m.-2 p.m. Tuesday and Thursday) to check with our files before completing the transaction.

Through this service we hope to be able to track the interstate or intrastate movements of stolen radio equipment, and hopefully find the people responsible for its theft and distribution.

As details are received, these will be passed on in small groups to AR for inclusion in the Hamad Stolen Equipment Section. ■

## HAMADS

- Eight lines free for all WIA members.
- \$9 per 3 cm for non-members.
- Copy in typescript please or in block letters to P.O. Box 150, Toorak, Vic. 3142.
- Repeats may be charged at full rates.
- Closing date: 1st day of the month preceding publication. Cancellations received after about 12th of the month cannot be processed.
- QTH means the advertiser's name and address are correct in the current WIA Radio Amateurs Call Book.

### FOR SALE

**FT272RA** 2m synthesised 10W mobile with four memories, up/down scanning, digital readout, four month old, new, \$350; **IC215 2m** 3w unit fitted with repeaters 2-8 and reverse 2, simplex 40, 49, 50, 51, 52, 53 VCV, includes nicad battery pack w/charger, flex. helical whip, car mounting cradle, good cond., new price about \$390, sell for \$250, ONO. VK3YJO, QTHR.

**ICOM IC292 2m SSB/CW Transceiver**, Oscar crystal and pre-amp, \$140; **ICOM IC292 6m SSB/CW Transceiver** as new, \$175; **TRIO CO-1303A Oscilloscope**, \$170; all with manuals and cartons. Ron VK3BRM, ex VK3ZER, QTHR. Ph. (071) 465 6769.

**Philips-TMC UHF Radiotelephone**, type SC9 5/470, new, complete with detailed handbook, suitable for use as a transceiver or repeater station, same unit is currently being used for Wollongong VHF repeater, further information available, at cost including credits, \$85. Brian VK4ST. Ph. (071) 911 7172.

**Kyokuto 2m FM Transceiver**, 800 channels, fully synthesised, 1/4 wave aerial, manual, microphone and mobile mounting bracket, \$300. VK5NJ, QTHR. Ph. (026) 276 6998.

**DC200 12V power supply for FT200 Transceiver**, \$120 or offer to Box 35, Daw Park 5041, S. Aust. Ph. (08) 276 4547.

**Kenwood TS-820** with digital readout, DC-DC converter, new tubes, AIWA mic., instr. manual, \$995. David VK2KDB, QTHR. Ph. (021) 476 1048.

**\$1,000 will put you on 2m and 6m** with "as new" gear; Kenwood TS 700A and 600A units, excellent order, \$1,000 the pair of \$550 each. VK3GM, QTHR. Ph. (053) 49 2028 A.H.

**Stereo Amplifier**, solid state, Realistic SA-10, as new with manual; cost \$36, sell \$15. Ph. (03) 659 84 168.

**ICOM IC22A**, 22 sets xtls, repeaters 1 to 8, and repeaters 1 to 8, simplex 40, 49, 50, 51 and av. ATU linear channel, deviation meter, ext. speaker, 2N6084 class C amp. in diecast box, 3 homebrew beams, 16 el. collinear, 5 el. parasitic and 4 el. quad, \$300 the lot or near offer. VK3ATK, QTHR. Ph. (03) 570 2184.

**Super Panther**, 18 ch. multi-mode, with ant. and HB, also orig. 22 ch. SW and PT mic., sale to licensed amateurs only, \$120. ONO; also 18 ch. SW suit electrophone, \$6. VK3ZCO. Ph. (03) 45 2566.

**Barlow-Wadley XCR-30 Rx**, v.g.c., \$200; xtal locked ULF conv. 10-500 kHz, 7 MHz i.f., \$200; telecommunications stacked J pole, 6 dB omni, 9 dB dir, suit 435 MHz, 50 ohms, \$45; Redline stepdown trans., 230-110V, 1500VA, \$35; home brew linear amp., 2 x 6JG6A (plus spare), 15-10m, 12V DC, 100W, 100V, plus ASS mags and books. Ph. (03) 546 3940 A.H.

**Ten-Tec 544 Transceiver** with external power supply, as new and genuine reason for selling, \$1,050. Ralph VK5NRD, Regency Park College, Regency Park 5010, SA, or Ph. (08) 466 6260.

**Heathkit HW101 SSB** with power supply, Heathkit (HP23B) mic. and speaker, \$380; SWR power meter, \$20; RF clipper, \$45; audio generator, \$30; Drake SSR1 Rx as new, \$275; frequency meter, 125-2000Kc (mains power supply), \$40; valves from \$2 to \$11.50 ea.; Heathkit tube checker, model TC2, \$35; Heathkit UTMV, mains power supply, \$25; Heathkit grid dip meter, \$35; Mecca 23 ch. CB tcvr BCB-6, \$20; various xtls, \$3 to \$10 ea. VK3ABD, QTHR. Ph. (03) 89 9946.

**Tri-Band Beam Hygain TH3JR**, as new, \$170, ONO. VK3NMJ. Ph. (050) 550 4203.

**Hygain 14AVO**, 40-10m, trapped vertical, good cond., \$45. VK3VU, QTHR. Ph. (03) 90 6424, A.H.

**Yaesu FR50 Rx**, 80-10m, AM-CW-SSB with WWV and 100kc calibrator, and FL50 Tx 80-10m SSB/CW 60W O/P with mil., handbooks and also VFO ext. VFO for Tx, all complete and good cond., would suit Novice use, \$300; also IC502 6m SSB Tcvr, S&C with el. quad, \$160. L. White, 30 Oaklands Rd., East Brisbane 4169. Ph. (07) 391 6160.

**Swan 350**, 117XCV power supply, good cond., working order, manual, new set of valves in Tx, recently overhauled, \$350. VK2NYD. Ph. (047) 51 1864.

**FRQ7 Comm. Rx**, 4 months old, mint cond., \$250; will deliver Victoria. Ph. (051) 58 1231 evenings.

**Amateur Station** just over one year old, little used! Swan hybrid Tcvr 750-CW-SSB-16B, Tx 550W PEP/360W CW, 3.5 to 30.0 MHz, with ultra selective 16 pole SSB IF filter, shape factor of 1.28, c/w 80/100 Hz CW filter, 25 or 100 kHz xtl calib., CW audio sidetone, VOX or PTT, with power supply, speak unit model 250XK, Shure 44A deck mic., handbooks and comprehensive SW kit of support spares included; this Tcvr as new, proven ex-performer, replacement cost around \$1,300, but will sell for \$1,100, ONO, buyer paying freight on-wards (4 packets). VK2BFF, QTHR. Ph. (043) 32 5758.

**New, unused, solid state test equip.**, Trio RF sig. gen. SG-402, serial 440027, 100 kHz to 30 MHz in 6 bands, \$100; Trio audio sig. generator AG-202A, serial 450392, 20 Hz to 200 kHz in 4 ranges, \$135; Hansen 27 MHz Tx/Rx tester, model FS-117, useful for CB tcvr fault finding, \$40; all in original factory cartons, surplus to present requirements; please add extra for postage or freight. VK2BFF, QTHR. Ph. (043) 32 5758.

**Teletype Model R038**, receive only hard copy printer/terminal, as new cond., connected to line printer to LSI-11, \$950. Please contact Ted Rigby. Ph. (042) 28 6811, 9 a.m.-5 p.m.

**Two W2AU Quad Hubs**, new, \$20. VK3NMJ. Ph. (03) 550 4203.

**Yaesu FT262B 6m Transceiver** with VG-75 VOX/voice controller, as new with handbook, \$515. VK2DBJ. Ph. (021) 634 2451.

**Yaesu FT200 HF Transceiver**, late model, with Yaesu matching AC supply and speaker, instruction book, and heavy duty mobile DC supply, excellent cond., \$385. VK3BGL. Ph. (052) 75 3154 A.H.

**Electronic Keyer**, Dick Smith Type, with inbuilt paddle, \$40; also Hidaka vertical antenna with 80m extension, \$80; both as new, VK3CBT, M. Smith, 5 Glenferrie Av., Doncaster. Ph. (03) 850 2238 after 6 p.m. or Bus. (03) 846 8866.

**Superhet. Rx**, Siemens 170-5000 MHz in 7 bands, c/w manual, useful for determining antenna radiation patterns, etc., \$200; Siemens capacitor unbalance test set, superb lab. instrument, must be seen, c/w manual, leads, etc., \$70; Varian Rubidun freq standard 5, 1, 0.5 MHz, \$100; pulse echo test set, very comprehensive unit with 6 in. dual beam CRT, pulse amp, 9 steps 2ch, 100 Kc and 30 Hz time base 0.5 to 150 u seconds, \$175; battery charger, constant potential rectifiers, a few types 50V at 3, 6 and 10A, price on application; Stancil voltage stabiliser O/P 240V at 11A, \$600; Counter, 500 kHz, 10 banks of 50, 35, VK3ZCN. Ph. (03) 557 6031, (03) 41 2934 Bus.

**Yaesu FT250 2m Transceiver**, \$275; YO101 monitor-scope, \$300 (both 4 months old, never used); FV101B ext. VFO for 101E, \$100; YC601 digital readout for 101E, \$200. Ph. (021) 888 2475.

**Trap Dipole, RAK Midy-Vn**, 80 through 10m, assembled and tuned to resonance on all bands, excellent cond., \$70. VK3NOA, Box 79, Heidelberg Regd. Ph. (03) 45 1731.

**8084 Lab. PSU**, improved EA design, plus and minus 0-20V, 1.5A/150 mA or tracking V and I meters, professionally built, \$60; multimeter TMK 100R, \$30; two 6K06 PA valves, new, \$8.50 ea.; two 20 ft. x 2 in. dia. alloy masts with nylon guys, pickets, hardware, \$15 ea.; buyer collect. Denzil VK2BFX. Ph. (03) 888 2981 A.H.

**Yaesu FT212R**, exc. cond., rarely used, 2m FM, SSB, AM, 144-148 MHz, 600 kHz offset VOX, noise blanker, 25W PEP out, 240 AC/12V DC operation, yag antennas, \$600. ONO, VK3GXG, QTHR. Ph. (03) 211 5289.

**Comm. Rx DX-160**, as new, \$150 6 only Pbe mobiles. Trvars, FM, \$4 ea. the lot, xtls to convert to 27.8 MHz, \$2.90, etc. \$2 ea.; can also be conv. to 2 or 6m B and K CB Servicemaster test eqpt. instr. manual, etc., brand new, cost \$300, sell \$150; Osker SWR-200, 1 kW, brand new, \$65; Philips M5509 CTV Conting. Gen., has VCR patterns, as new, present cost \$1,400, sell from \$600, 2 only; 001 10 kV Tx case, \$4 ea.; Trio TR-2E 2m Tcvr, cct. diag., \$95; 6-m Command Rx, 102, 52.525 FM carphone, goes OK, 326; STC hybrid carphone, 2m FM 25W, ch. 40, and purdl, etc. \$65; mic. and cradle and cct. diag., Pbe carphone 6m tuneable Rx, 151; 3-6m Conting. Gen., \$10; 40, 100, 400, 1000 Hz sine wave types, 4-48m, \$1 ea. send for list of actual frequencies. Command Rx rack, takes 3 rec., 52, and 2 m converters and power supply on same chassis, \$10. Will freight. Write VK2ZBD, Box 16, Hawks Nest 2324. Ph. (049) 97 0383.

**Repeater 2 xtls**, suit AWA, Vinten, IGL, ICOM IC22A, Yaesu FT2, Ken Multi-7, etc.; have one set for each of above rigs, only 1 set a set posted. VK3ZNC/NIC, QTHR. Ph. (051) 41 2368 A.H.

**Comm. Rx Drake SPR4 Noise Blanker**, 150 kHz-30 MHz, 160m 80-10m, SSB, CW, AM, \$666, ONO, L30142, QTHR.

**Atlas 210X HF Tcvr**, SSB and CW, 80-10m, complete h/b'book, power cables, plugs and mic., \$600. VK2APP, QTHR. Ph. (063) 83 6206.

**Kenwood TR7400A VHF Trcv.**, 800 FM chs., 144-148 MHz, 25/30W, complete with mic., mobile mount, power cable, h'book, built-in scanner, \$400. VK2APP, QTHR. Ph. (063) 83 6206.

**Kenwood TS520, AC-DC model, perfect cond.,** any trial, \$615, ONO; Willis pi-coupler coil. \$10. VK3PR, QTHR. Ph. (056) 62 2711.

**Yaesu FTDX 400 Trcv** with adjustable effective noise blaster, spkr, cooling fan, second VFO, set of 19 spare valves and manual, \$475; TR44 color and control unit, with manual, \$80; MFJ (US) audio speech processor and manual, \$25; all equipment clean, unmarked and in original working order. VK2AOU, QTHR. Ph. (02) 53 9789 A.H., (02) 807 0484 Bus.

**Hallcrafters SX-28 Rx** c/w spare valves and hand-book, modified for 55B, well maintained and neat appearance, \$110. VK4ES, QTHR. Ph. (07) 371 5451.

**Swan 240**, complete with power supply, 80m, 40m, 20m, in good working order, \$180. VK3AVA, 8 Brennan Street, McKinnon 3204. Ph. (03) 578 2058.

**Yaesu FTDX400 Transceiver**, exc. cond., has SP-400 speaker, PTT mic. and superb "Magnum 6" RF speech processor designed for FTDX400, imported from USA, \$525. H. Young VK7AR, Box 90, Devonport 7310.

**TH6-DX Hi-Gain Beam**, 6 el., 20-15-10m, 8 years old but good cond., new reflector in balm bracket, \$150. Carl Bicknell VK3BCF. Ph. (03) 699 5433 Bus., (03) 347 4295 A.H.

**Hi-Gain Long John** converted 10m, 5 el. mono yagi, \$100; 5 el. 15m mono yagi, \$120; Hi-Gain, Hi-Quad 2 el. Tri-Band quad, \$150; AIGA AT 3000C heavy duty rotator, \$110; 50 ft. Hills tower, \$100. VK7NVC, QTHR. Ph. (002) 28 1891 A.H., (002) 78 0777 Bus.

**HF Tri-Band Yagi Mosley TA33JR**, old but working, buyer collect, allow one hour to remove, \$100. VK3WV, QTHR.

**FT101B Transceiver**, complete with mic. and hand-book, \$555; IQ202E c/w mounting cradle, 3 months old, \$210; 25W linear to suit, \$60. VK3RD, QTHR. Ph. (03) 579 5272.

**"Learning Morse Code"**, new commercially printed book, excellent value, \$6.50 posted, with two C60 Morse cassettes. K. Wilson, WIA VK2 Education Service, PO Box 109, Toongabbie 2146.

**The Famous Morse Kit**, contains Morse and theory, texts, tapes and 1000 typical exam questions, only \$15, posted. K. Wilson, WIA VK2 Education Service, PO Box 109, Toongabbie 2146.

**Learning Morse?** Need a set speed tape? You nominate any speed between 4-20 w.p.m. We will send you a C60 tape for \$2. Fred Santos, VK2 Education Service, 8 Cooper Street, Blacktown 2148.

**Yaesu FT-101E Trx**, 160-10m transceive, plus 10 MHz WWV and 27 MHz CB receive, very effective noise blaster, current model with front panel control for RF speech processor level, 100-120/200-240V AC, 13.8V DC, has had little use, excellent cond., overseas travel necessitates sale, \$725, ONO. Alan Beagley VK4AFE. Ph. (07) 371 4399.

**Drake T4X Trx** SSB/CW AM 200W DC input with Drake AC4 power supply and mic., Drake RA4 Rx with Drake noise blaster and accessory filters, Drake SA-4 spkr., Drake MN-4 ant. matching net, SWR bridge, Watt meter, mint cond., any test or inspection welcome, full price complete Drake station, \$985. VK2JO, QTHR. Ph. (02) 389 0428 or (02) 389 7786 Bus., (02) 36 7756 A.H.

**FT200 Transceiver** converted for Night, complete with manual, v.g.c., \$350. Maurice Wright, 44 Lockwood Road, Kangaroo Flat 3555. Ph. (054) 47 7405.

**FT-101E HF Transceiver**, latest version, unused, complete with AC-DC supply, mic., accessories and manual, \$720. Martin Donaldson VK4ZMF, QTHR. Ph. (03) 397 5657.

**Yaesu LPF**, 1kW rating, \$20; desk type PTT mic., \$12; Ringo ARX-2 2m FM antenna, \$30; Swan WM-1500 RF power meter, 5/50/500/1500 watts, \$50; Barlow XCR-30 comm. receiver, excellent order, \$200. Contact VK3OM, QTHR. Ph. (03) 560 9215.

## WANTED

**Kenwood TS500 6m Transceiver**; also linears, valves or transistors for 6m; also 6m beams, especially for portable use. L. White, 30 Oaklands Drive, East Brisbane 4169, Qld. Ph. (07) 391 6160.

**4XC250B Linear Amplifier** (or similar) for 426 MHz operation. Please contact Jim VK5ZSA. Ph. (088) 21 1196 or (088) 21 1746 A.H.

**From your junk box**, knobs for WWII transceivers, Type 3, Mark 2, and Type A, Mark 3 (see photos AR November 1978, p. 30); also required front panel for Type A and power supply plugs Type 3, VK5BA, One Tree Hill 5114, SA. Ph. (08) 380 7192.

**Kenwood KP202 2m FM Trcv.**, c/w nicad batteries and charging base, will pay fair price. VK3WT, QTHR. Ph. (03) 288 5175.

**Operating Manual for Facsimile Rx Muirhead D-900 P/B.** VK7NHV, Box 181, Moonah 7009.

**MR6A Carphone Junior Workshop Manual** to borrow for photocopying or will buy. Kevin Moore, VK3ASM, QTHR. Ph. (03) 754 4194.

**Yaesu FT-201 Transceiver** (not FT-202); Yaesu FT-2FB, 2m FM xcvr, number of channels not important. Particulars to VK3OM, QTHR. Ph. (03) 560 9215.

**6M Transceiver**, 28 MHz IF, must be g.w.o., reasonable price; ARRL and RSGB handbooks, etc., 1955-1965, any cond. VK7WD, 30 Beddome Street, Sandy Bay, Hobart, Tas. 7005. Ph. (02) 52 3873 A.H.

## EXCHANGE

**FT-7**, with regulated AC supply, 30 contacts only, any inspection; wish exchange for suitable AC Yaesu or Kenwood base transceiver, VK2PT, QTHR. Ph. (049) 43 1308.

## GIFT

**Light Oregon Mast**, forty feet, on ground, free to anyone who can transport away. VK3GA, QTHR. Ph. (03) 29 7256.

## TRADE HAMADS

**QSL cards, log books, contest sheets** — send 20c stamp for samples and prices to Linda Luther VK4VV, P.O. Box 498, Nambour, Qld. 4560.

**KLM imported mono band beams** for 40, 20 & 15 (ex-stock). Comprehensive range high gain beams for HF, VHF & UHF, suit amateur, novice & CB operators. 5, 6 & 11 ft. models suit UHF-CB. Range of baluns and power dividers. Write for free catalogue. ATN Antennas, Box 80, Birchpi, 3463. Ph. (054) 92 3211, ask for 264.

**HF Dummy Loads**. We have a quantity of Electroslid Deposited film resistors available, 250W rating at 15 ohms. Put 2 in parallel for 75 ohm 500W dummy load, or 3 in parallel for 50 ohm 750W dummy load. All are A1 guaranteed. Original cost was over \$50 ea. yours for only \$8.50 ea. plus \$1 P and P on all orders. Royce Electronics, Box M220 SME, Redfern, NSW 2012.

## QSP

**IHF OPPOSED TO INTERFERENCE LEGISLATION**  
Representatives of the USA Institute of High Fidelity testified recently at federal hearings into the impact of radio frequency interference on consumer electronic products. IHF's Technical Director, Leonard Feldman, told the Senate's Communications Subcommittee that the Goldwater sponsored S.864 would force unnecessarily high prices on consumers. "Every purchaser of an audio component should not have to bear the cost of including multiple RFI filters and shielding in high fidelity components when a large percentage of purchasers will never experience any interference problem." Enforcing such government-sponsored legislation, Feldman contended, would unnecessarily increase the cost of manufacturing hi-fi equipment.  
— From Vicom Ham News, January 1979.

## GEMFIELDS RADIO GROUP, RUBYVALE 4702

This recently formed affiliated group situated in the Central Queensland sapphire fields, intends to run a contest during August 1979, to coincide with the Centenary of the fields — Details of dates, times, will be released, closer to the contest time. ■

## SILENT KEYS

It is with deep regret that we record the passing of —

Mr. E. H. MOORE  
Mr. S. G. BAXTER  
Mr. W. J. CROMIE

L31108  
VK3ZAB  
VK2MZ

## OBITUARY

**WAL CROMIE** VK2MZ  
It was with deep regret that the passing of Wal was recorded on 5th February, 1979.

In recent years he suffered a number of serious illnesses. Between bouts, with the aid of his wife, he journeyed to many parts of Australia, complete with caravan and appropriate radio equipment for the trip.

His amateur activity commenced pre-war, joining the RAAF in 1940.

Serving in the radio field for the duration, he was discharged in 1946 to rejoin in the same year and finally leaving the service in 1962.

Wal was essentially an experimenter; his extensive operation on the VHF bands in the 1950 and 1960 era ensured that VK2MZ was one of the best known calls in that part of the spectrum.

Always a happy, modest person, his tremendous enthusiasm and ability inspired many others to join the amateur ranks. Wal would help them in any way.

A member of the Blaxland Bush Fire Brigade, he clearly demonstrated the value of VHF communication, building base and tender equipment to show its advantages over HF working. Later all communication was taken over by the City Council.

Wal received little credit, as did others, for their original work in the field.

In the disastrous bushfires in the Blue Mountains in 1968 Wal was again active.

All amateurs extend to his wife Peg, son Robert, and daughter-in-law Lyn, their deepest sympathy.

— From W. M. Moore VK2HZ.

## ADVERTISERS' INDEX

AMATEUR ELECTRONIC IMPORTS	26
AMATEUR'S PARADISE	37
AMATEUR RADIO ACTION	18
ATN ANTENNAS	50
AUSTRALIAN SOUND AND SIGNAL RESEARCH	6
"BAIL" ELECTRONICS	19
BRIGHT STAR CRYSTALS	17
"CHIRNSIDE ELECTRONICS	27
CUSTOM COMMUNICATIONS	2
"DICK SMITH ELECTRONICS	43
EMONA ELECTRONICS	44, 45, 46
FGS ELECTRONIC IMPORTS	25
L. LUTHER	50
EDF ROOMS	30
ROYCE ELECTRONICS	5
"SCALAR INDUSTRIES	60
SIEBAND ELECTRONIC IMPORTS	35
SIEBAND ELECTRONIC SALES	18, 36
GRAHAM STALLARD	37
TOWNSVILLE RADIO CLUB	37
TRO-KENWOOD	52
"VICOM	17, 51
WIA NSW DIVISION	48
WILLIAM WILLIS & CO. PTY. LTD.	37
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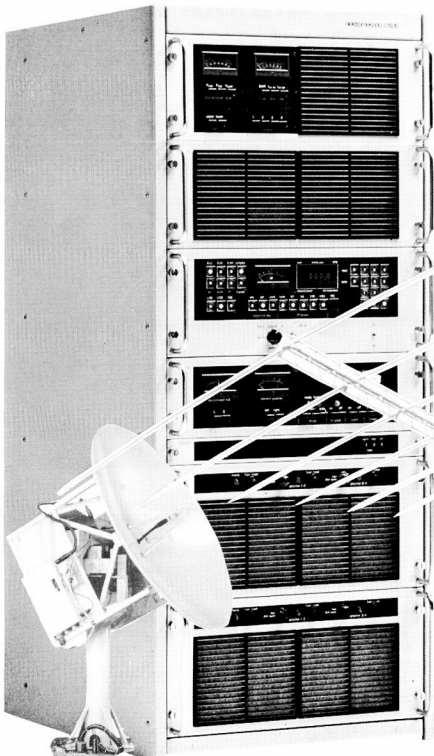
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